1FCC 47 CFR § 2.1093
IEEE Std 1528-2013

SAR EVALUATION REPORT

FOR

GSM/WCDMA/LTE/5G NR Phone + BT/BLE, DTS/UNII a/b/g/n/ac and NFC

MODEL NUMBER: SM-A236B/DSN

FCC ID: A3LSMA236BN

REPORT NUMBER: 4790406778-S1V1

ISSUE DATE: 6/29/2022

Prepared for
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IAS ACCREDITED

Testing Laboratory

TL-637

Revision History

Rev.	Date	Revisions	Revised By
V1	6/29/2022	Initial Issue	--

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1. Attestation of Test Results

Applicant Name		SAMSUNG ELECTRONICS CO.,LTD.			
FCC ID		A3LSMA236BN			
Model Number		SM-A236B/DSN			
Applicable Standards		FCC 47 CFR § 2.1093 IEEE Std 1528-2013 Published RF exposure KDB procedures			
Exposure Category		SAR Limits (W/Kg)			
		Peak spatial-average (1g of tissue)		Product Specific 10g (10g of tissue)	
General population / Uncontrolled exposure		1.6		4.0	
RF Exposure Conditions		Equipment Class - The Highest Reported SAR (W/kg)			
		PCE	DTS	NII	DSS
Head		0.61	<0.10	0.20	0.61
Body-worn		0.51	0.25	0.45	0.23
Hotspot		1.09	0.48	0.46	0.47
Product Specific 10g		N/A	N/A	1.67	N/A
Simultaneous TX	Head	1.40	0.89	1.40	1.40
	Body-worn	1.50	0.95	1.50	1.50
	Hotspot	1.50	1.57	1.50	1.50
	Product Specific 10g	N/A	N/A	N/A	N/A
Date Tested		5/23/2022 to 6/28/2022			
Test Results		Pass			

UL Korea, Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Korea, Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Korea, Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Korea, Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by IAS, any agency of the Federal Government, or any agency of any government.

Approved & Released By:	Prepared By:
Justin Park Operations Leader UL Korea, Ltd. Suwon Laboratory	Seungyeon Kim Senior LaboratoryTechnician UL Korea, Ltd. Suwon Laboratory

1.1. The Highest Reported SAR for RF exposure conditions for each bands

Equipment Class	Band	Antenna	The Highest Reported SAR (W/kg)			
			1g of tissue			10g of tissue
			Head Exposure condition	Body-worn Exposure condition	Hotspot Exposure condition	Product Specific Exposure condition
PCE	GSM 850	Main. 1	0.359	**0.507**	**1.094**	N/A
	GSM 1900	Main. 2	0.144	0.298	0.380	N/A
	WCDMA Band II	Main. 2	0.281	0.505	0.474	N/A
	WCDMA Band IV	Main. 2	0.211	0.486	0.427	N/A
	WCDMA Band V	Main. 1	0.259	0.377	0.789	N/A
	LTE Band 2	Main. 2	0.260	0.506	0.558	N/A
	LTE Band 2	Sub. 1	**0.613**	0.099	**0.196**	N/A
	LTE Band 4	Main. 2	N/A	N/A	N/A	N/A
	LTE Band 5	Main. 1	0.275	0.327	0.740	N/A
	LTE Band 12	Main. 1	0.253	0.480	0.632	N/A
	LTE Band 17	Main. 1	N/A	N/A	N/A	N/A
	LTE Band 26	Main. 1	0.303	0.368	0.744	N/A
	LTE Band 66	Main. 2	0.222	0.481	0.389	N/A
	LTE Band 66	Sub. 1	0.608	0.097	0.182	N/A
	LTE Band 41	Main. 2	0.172	0.313	0.763	N/A
	NR Band n5	Main. 1	0.264	0.244	0.513	N/A
	NR Band n66	Main. 2	0.230	0.296	0.791	N/A
	NR Band n66	Sub. 1	0.553	0.493	0.672	N/A
DTS	2.4GHz WLAN	WiFi/BT Ant.	**0.088**	**0.246**	**0.477**	N/A
UNII	5GHz WLAN	WiFi/BT Ant.	**0.196**	**0.449**	**0.455**	1.666
DSS	Bluetooth	WiFi/BT Ant.	**0.605**	**0.226**	**0.472**	N/A

2. Test Specification, Methods and Procedures

The tests documented in this report were performed in accordance with FCC 47 CFR § 2.1093, IEEE STD 1528-2013, ANSI C63.26-2015 the following FCC Published RF exposure KDB procedures:

- 248227 D01 802.11 Wi-Fi SAR v02r02
- 447498 D01 General RF Exposure Guidance v06
- 648474 D04 Handset SAR v01r03
- 690783 D01 SAR Listings on Grants v01r03
- 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04
- 865664 D02 RF Exposure Reporting v01r02
- 941225 D01 3G SAR Procedures v03r01
- 941225 D05 SAR for LTE Devices v02r05
- 941225 D05A LTE Rel.10 KDB Inquiry Sheet v01r02
- 941225 D06 Hotspot Mode v02r01
- 941225 D07 UMPC Mini Tablet v01r02
- 971168 D01 Power Meas License Digital System v03r01

In addition to the above, the following information was used:

- TCB workshop October, 2014; RF Exposure Procedures Update (Overlapping LTE Bands)
- TCB workshop October, 2014; RF Exposure Procedures Update (Other LTE Considerations)
- TCB workshop October, 2016; RF Exposure Procedures (Bluetooth Duty Factor)
- TCB workshop October, 2016; RF Exposure Procedures (DUT Holder Perturbations)
- TCB workshop May, 2017; RF Exposure Procedures (LTE Test Conditions)
- TCB workshop November, 2017; RF Exposure Procedures (LTE UL/DL Carrier Aggregation SAR)
- TCB workshop April, 2018; RF Exposure Procedures (LTE DL CA SAR Test Exclusion Update)
- TCB workshop April, 2019; RF Exposure Procedures (Tissue Simulating Liquids (TSL))
- TCB workshop October, 2020; 5G RFX Policies (Intra-band and Inter-band NSA-EN-DC evaluation)
- TCB workshop April, 2022; RF Exposure Procedures (5G NR FR1 Measurement)
- TCB workshop April, 2022; RF Exposure Procedure (Sum-Peak Location Separation Ratio)

3. Facilities and Accreditation

The test sites and measurement facilities used to collect data are located at

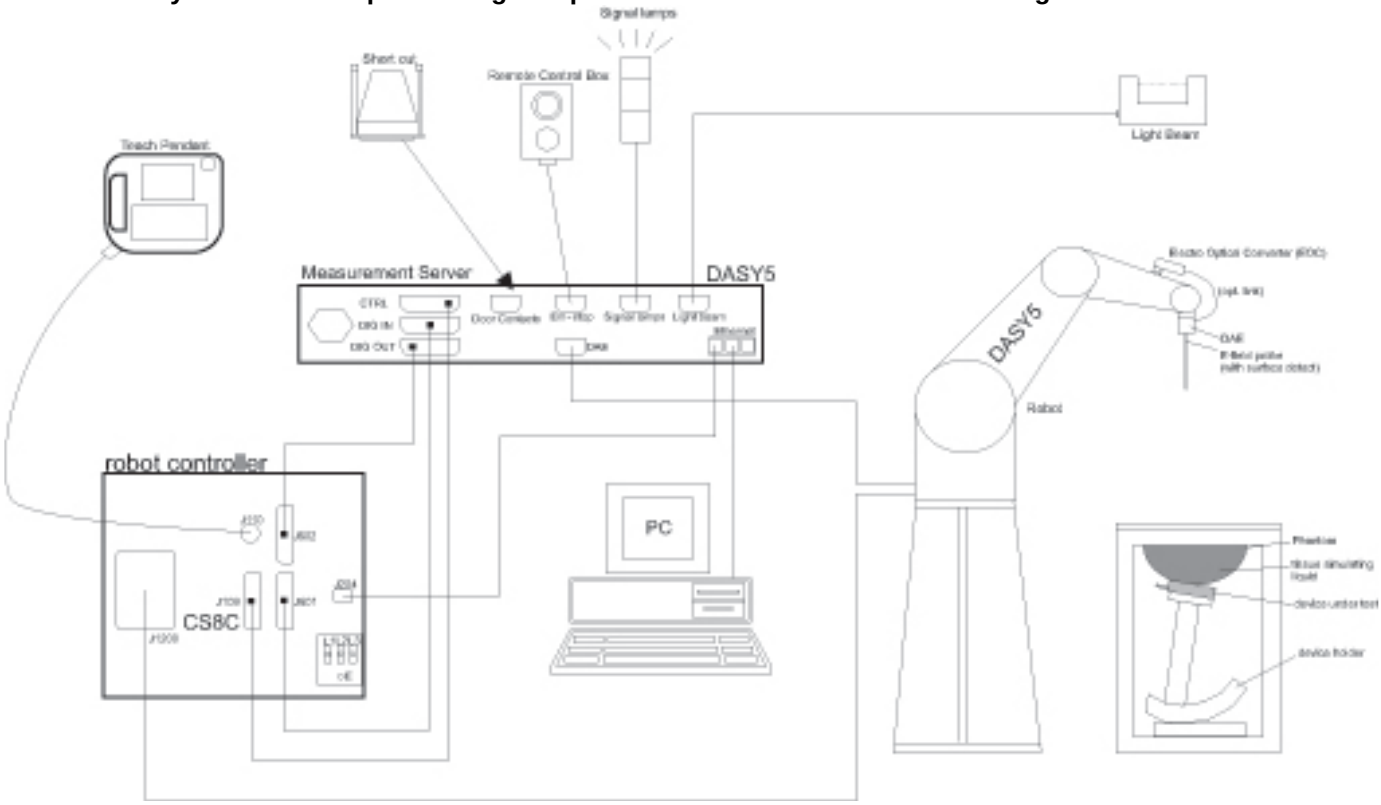
Suwon
SAR 1 Room
SAR 6 Room
SAR 7 Room
SAR 8 Room
SAR 9 Room

UL Korea, Ltd. is accredited by IAS, Laboratory Code TL-637.
The full scope of accreditation can be viewed at https://www.iasonline.org/wp-content/uploads/2017/05/TL-637-cert-New.pdf.

4. SAR Measurement System & Test Equipment

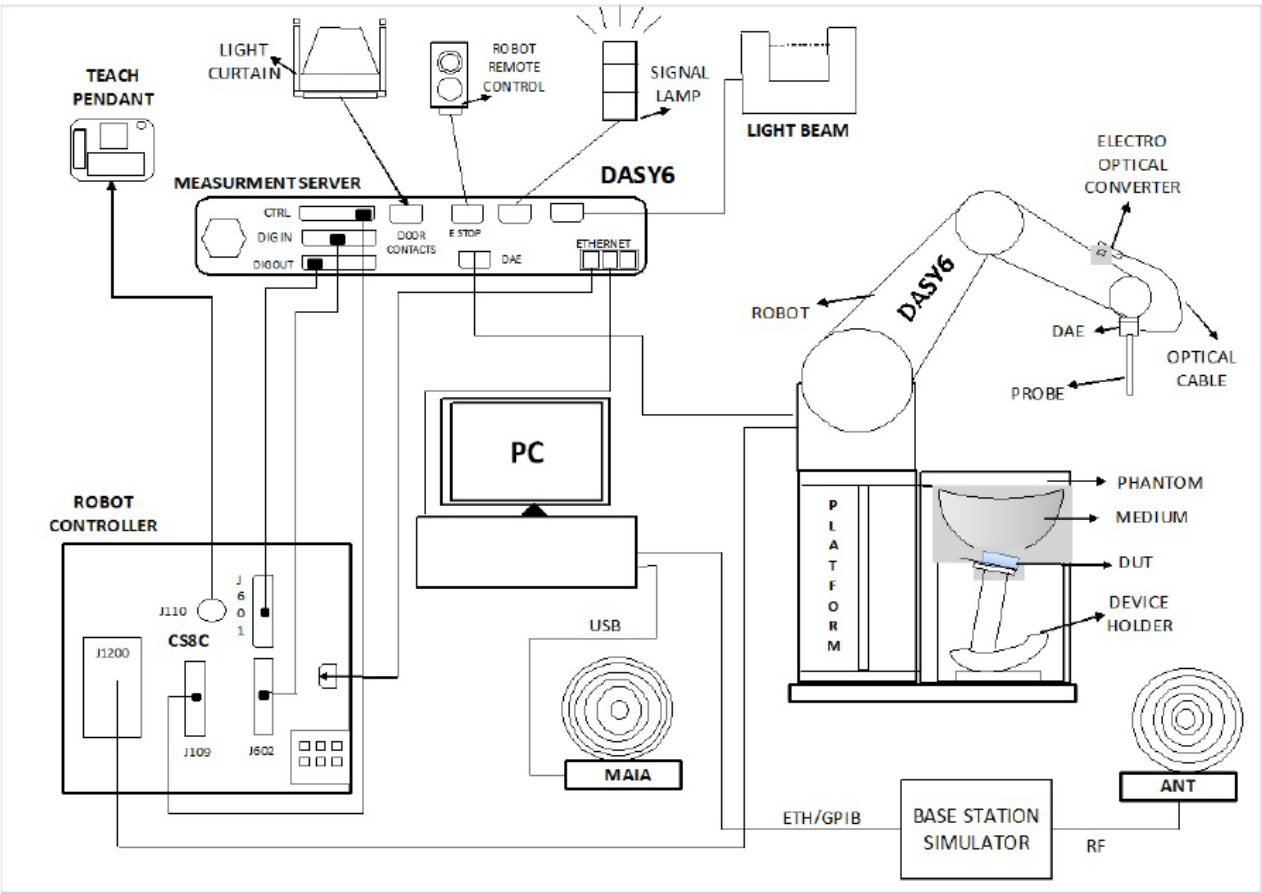
4.1. SAR Measurement System

The DASY5 system used for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP or Win7 and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

The DASY6 & 8 system used for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running Win10 and the DASY6 or 8 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

4.2. SAR Scan Procedures

Step 1: Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. The minimum distance of probe sensors to surface is 2.1 mm. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

Step 2: Area Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maximal found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE Standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan). If only one Zoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of Zoom Scans has to be increased accordingly.

Area Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

Step 3: Zoom Scan

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. The Zoom Scan measures points (refer to table below) within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the Zoom Scan evaluates the averaged SAR for 1 g and 10 g and displays these values next to the job's label.

Zoom Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

Step 4: Power drift measurement

The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1.

Step 5: Z-Scan (FCC only)

The Z Scan measures points along a vertical straight line. The line runs along the Z-axis of a one-dimensional grid. In order to get a reasonable extrapolation the extrapolated distance should not be larger than the step size in Z-direction.

4.3. Test Equipment

The measuring equipment used to perform the tests documented in this report has been calibrated in accordance with the manufacturers' recommendations, and is traceable to recognized national standards.

Dielectric Property Measurements

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Network Analyzer	Agilent	E5071C	MY46522054	8-6-2022
Network Analyzer	ROHDE & SCHWARZ	ZNB 20	102256	8-6-2022
Dielectric Assessment Kit	SPEAG	DAK-3.5	1196	7-21-2022
Shorting block	SPEAG	DAK-3.5 Short	SM DAK 200 BA	N/A
Thermometer	LKM	DTM3000	3851	8-4-2022
Thermometer	LKM	DTM3000	3862	8-4-2022

System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
MXG Analog Signal Generator	Agilent	N5181A	MY50145882	8-4-2022
MXG Analog Signal Generator	Keysight	N5181B	MY59100587	8-4-2022
MXG Analog Signal Generator	Keysight	N5173B	MY59101083	8-4-2022
Power Sensor	Keysight	U2000A	MY60180020	8-4-2022
Power Sensor	Agilent	U2000A	MY54260007	8-4-2022
Power Sensor	Agilent	U2000A	MY54260010	8-4-2022
Power Amplifier	EXODUS	AMP2027	1410025-AMP2027-10003	8-4-2022
Power Amplifier	EXODUS	AMP2027ADB	10002	8-4-2022
Directional Coupler	Agilent	772D	MY52180193	8-3-2022
Directional Coupler	H.P	778D	16133	8-3-2022
Low Pass Filter	MICROLAB	LA-15N	3943	8-3-2022
Low Pass Filter	FILTRON	L14012FL	1410003S	8-3-2022
Low Pass Filter	MICROLAB	LA-60N	3942	8-3-2022
Low Pass Filter	MINI-CIRCUITS	NLP-1200	VUU19301915	8-4-2022
Attenuator	KEYSIGHT	8491B/003	VE2017A0283	8-4-2022
Attenuator	KEYSIGHT	8491B/010	MY39271981	8-4-2022
Attenuator	KEYSIGHT	8491B/010	MY39272011	8-4-2022
Attenuator	KEYSIGHT	8491B/020	MY39271973	8-4-2022
Attenuator	MINI-CIRCUITS	BW-N3W5+	N/A	8-4-2022
Attenuator	MINI-CIRCUITS	BW-N10W5+	N/A	8-4-2022
Attenuator	MINI-CIRCUITS	BW-N10W5+	N/A	8-4-2022
Attenuator	MINI-CIRCUITS	BW-N20W5+	N/A	8-4-2022
Attenuator	MINI-CIRCUITS	BW-N20W5+	N/A	8-4-2022
E-Field Probe	SPEAG	EX3DV4	7330	1-28-2023
E-Field Probe	SPEAG	EX3DV4	7313	3-2-2023
E-Field Probe	SPEAG	EX3DV4	7545	8-26-2022
E-Field Probe	SPEAG	EX3DV4	7645	4-29-2023
E-Field Probe	SPEAG	EX3DV4	7376	7-30-2022
E-Field Probe	SPEAG	EX3DV4	3928	3-3-2023
Data Acquisition Electronics	SPEAG	DAE4	1494	7-27-2022
Data Acquisition Electronics	SPEAG	DAE4	1591	3-24-2023
Data Acquisition Electronics	SPEAG	DAE4	1343	8-23-2022
Data Acquisition Electronics	SPEAG	DAE4	1667	4-27-2023
Data Acquisition Electronics	SPEAG	DAE4	1668	4-27-2023
Data Acquisition Electronics	SPEAG	DAE4	912	11-22-2022
System Validation Dipole	SPEAG	D750V3	1122	2-24-2024
System Validation Dipole	SPEAG	D750V3	1205	4-27-2023
System Validation Dipole	SPEAG	D835V2	4d194	3-24-2023
System Validation Dipole	SPEAG	D835V2	4d174	3-17-2023
System Validation Dipole	SPEAG	D1750V2	1125	2-24-2023
System Validation Dipole	SPEAG	D1750V2	1180	4-27-2023
System Validation Dipole	SPEAG	D1900V2	5d190	11-24-2022
System Validation Dipole	SPEAG	D2450V2	960	3-24-2023
System Validation Dipole	SPEAG	D2600V2	1097	9-29-2023
System Validation Dipole	SPEAG	D2600V2	1178	4-23-2023
System Validation Dipole	SPEAG	D5GHzV2	1209	11-24-2023
Thermometer	Lutron	MHB-382SD	AH.91463	8-4-2022
Thermometer	Lutron	MHB-382SD	AH.50215	8-3-2022
Thermometer	Lutron	MHB-382SD	AH.50213	8-4-2022
Thermometer	Lutron	MHB-382SD	AH.45903	8-3-2022

Others

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Base Station Simulator	R & S	CMW500	150313	8/3/2022
Base Station Simulator	R & S	CMW500	150314	8/4/2022
Base Station Simulator	R & S	CMW500	162790	8/3/2022
Base Station Simulator	R & S	CMW500	169803	5/27/2023
Base Station Simulator	R & S	CMW500	169801	8/3/2022
Base Station Simulator	R & S	CMW500	169799	8/3/2022
Base Station Simulator	R & S	CMW500	169800	6/20/2023
Base Station Simulator	R & S	CMW500	169797	8/3/2022
Base Station Simulator	R & S	CMW500	169798	8/3/2022
UXM 5G Wireless Test Platform	Keysight	E7515B	MY59150850	12/13/2022
UXM 5G Wireless Test Platform	Keysight	E7515B	MY58460570	12/13/2022
UXM 5G Wireless Test Platform	Keysight	E7515B	MY57510596	8/6/2022

Note(s):

1. For System Validation Dipole, Calibration interval applied every 2 years according to referencing KDB 865664 guidance.
2. Refer to Appendix F that mentioned about justification for Extended SAR Dipole Calibrations. (for blue box items)
3. All equipments were used until Cal.Due data.

5. Measurement Uncertainty

Per KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be ≤ 30%, for a confidence interval of k = 2. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval.

5.1. DECISION RULE

Decision rule for statement(s) of conformity is based on Procedures 1, Clause 4.4.2 in IEC Guide 115:2007.

6. Device Under Test (DUT) Information

6.1. DUT Description

Device Dimension	Refer to Appendix A.		
Back Cover	☒ The Back Cover is not removable.		
Battery Options	☒ The rechargeable battery is not user accessible		
Wireless Router (Hotspot)	Wi-Fi Hotspot mode permits the device to share its cellular data connection with other Wi-Fi-enabled devices. ☒ Mobile Hotspot (Wi-Fi 2.4 GHz) ☒ Mobile Hotspot (Wi-Fi 5.8 GHz)		
Wi-Fi Direct	Wi-Fi Direct enabled devices transfer data directly between each other ☒ Wi-Fi Direct (Wi-Fi 2.4 GHz) ☒ Wi-Fi Direct (Wi-Fi 5.2 GHz_UNII-1, Wi-Fi 5.8 GHz_UNII-3)		
Test Sample Information	**No.**	**S/N**	**Notes**
	1	R3CT506PCSY	Main Conducted
	2	R3CT506P9XJ	Main Conducted
	3	R3CT506PHRL	WLAN Conducted
	4	R3CT506P93K	SAR
	5	R3CT506Q1VJ	SAR
	6	R3CT506PD1T	SAR
	7	R3CT506PDCD	SAR

6.2. Wireless Technologies

Wireless technologies	Frequency bands	Operating mode		Duty Cycle used for SAR testing
GSM	850 1900	Voice (GMSK) GPRS (GMSK) EGPRS (8PSK)	GPRS Multi-Slot Class: ☐ Class 8 - 1 Up, 4 Down ☐ Class 10 - 2 Up, 4 Down ☐ Class 12 - 4 Up, 4 Down ☒ Class 33 - 4 Up, 5 Down	GSM Voice: 12.5% (E)GPRS: 1 Slot: 12.5% 2 Slots: 25% 3 Slots: 37.5% 4 Slots: 50%
	Does this device support DTM (Dual Transfer Mode)? ☐ Yes ☒ No			
W-CDMA (UMTS)	Band II Band IV Band V	UMTS Rel. 99 (Voice & Data) HSDPA (Category 24) HSUPA (Category 6) DC-HSDPA (Category 24) HSPA+ (DL only)		100%
LTE	FDD Band 2 FDD Band 4 FDD Band 5 FDD Band 12 FDD Band 17 FDD Band 26 TDD Band 41 FDD Band 66	QPSK 16QAM 64QAM 256QAM Rel. 15 Carrier Aggregation (1 Uplink and 4 Downlinks)		100% (FDD) 63.3% (TDD)
	Does this device support SV-LTE (1xRTT-LTE)? ☒ Yes ☒ No			
5G NR (Sub 6) FDD Bands	NR Band n5 NR Band n66	DFT-s-ODFM: ■ π/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM CP-ODFM: ■QPSK, 16QAM, 64QAM, 256QAM		100%
Wi-Fi	2.4 GHz	802.11b 802.11g 802.11n (HT20)		SISO mode 98.9% (802.11b)
	5 GHz	802.11a 802.11n (HT20) & (HT40) 802.11ac (VHT20) & (VHT40) & (VHT80)		SISO mode 98.7% (802.11a) 98.3% (802.11ac (VHT80))
	Does this device support bands 5.60 ~ 5.65 GHz? ☒ Yes ☐ No			
	Does this device support Band gap channel(s)? ☒ Yes ☐ No			
Bluetooth	2.4 GHz	Version 5.0 LE		77.5% (DH5)
NFC	13.56 MHz	Type A/B/F		Note.3

Notes:

1. The Bluetooth protocol is considered source-based averaging. Bluetooth GFSK (DH5) was verified to have the highest duty cycle of 77.5% and was considered and used for SAR Testing.
2. Duty cycle for Wi-Fi is referenced from the DTS and UNII report.
3. Measured Duty Cycle is not required due to SAR test exemption.

6.3. Nominal and Maximum Output Power

KDB 447498 sec.4.1. at the maximum rated output power and within the tune-up tolerance range specified for the product, but not more than 2 dB lower than the maximum tune-up tolerance limit

RF Air interface	Antenna	Mode	Time Slots	Max. RF Output Power (dBm)		Reduced. RF Output Power (Hotspot & Proximity sensor & Earjack back-off) (dBm)	
				Tune-up Limit	Frame Pwr	Tune-up Limit	Frame Pwr
GSM850	Main 1 Ant.	Voice	1	**34.00**	**24.97**		
		GPRS	1	**34.00**	**24.97**		
		GPRS	2	**32.00**	**25.98**		
		GPRS	3	**30.00**	**25.74**		
		GPRS	4	**28.50**	**25.49**		
		EGPRS	1	**27.50**	**18.47**		
		EGPRS	2	**26.00**	**19.98**		
		EGPRS	3	**24.00**	**19.74**		
		EGPRS	4	**23.00**	**19.99**		
GSM1900	Main 2 Ant.	Voice	1	**31.00**	**21.97**	**29.00**	**19.97**
		GPRS	1	**31.00**	**21.97**	**29.00**	**19.97**
		GPRS	2	**28.00**	**21.98**	**27.00**	**20.98**
		GPRS	3	**27.00**	**22.74**	**25.50**	**21.24**
		GPRS	4	**25.00**	**21.99**	**23.00**	**19.99**
		EGPRS	1	**27.00**	**17.97**	**25.00**	**15.97**
		EGPRS	2	**25.00**	**18.98**	**23.00**	**16.98**
		EGPRS	3	**23.50**	**19.24**	**21.00**	**16.74**
		EGPRS	4	**22.00**	**18.99**	**20.00**	**16.99**

RF Air interface	Antenna	Mode	Max. RF Output Power (dBm)	Reduced. RF Output Power (Hotspot & Proximity sensor & Earjack back-off) (dBm)
W-CDMA Band II	Main 2 Ant.	R99	**25.00**	**22.00**
		HSDPA	**24.50**	**21.50**
		HSUPA	**24.50**	**21.50**
		DC-HSDPA	**23.00**	**20.00**
W-CDMA Band IV	Main 2 Ant.	R99	**25.00**	**22.00**
		HSDPA	**24.50**	**21.50**
		HSUPA	**24.50**	**21.50**
		DC-HSDPA	**24.00**	**21.00**
W-CDMA Band V	Main 1 Ant.	R99	**25.00**	
		HSDPA	**24.50**	
		HSUPA	**24.50**	
		DC-HSDPA	**24.00**	

Note :.

1. GSM / WCDMA Bands is not support RCV Back-off operation.

RF Air interface	Antenna	Mode	Max. RF Output Power (dBm)	Reduced. RF Output Power (dBm) (Hotspot & Proximity sensor & Ear-jack back-off)
LTE Band 2	Main 2 Ant.	QPSK	**24.50**	**22.00**
LTE Band 2	Sub 1 Ant.	QPSK	**20.00**	
LTE Band 4	Main 2 Ant.	QPSK	**25.00**	**22.00**
LTE Band 5	Main 1 Ant.	QPSK	**24.70**	
LTE Band 12	Main 1 Ant.	QPSK	**25.70**	
LTE Band 17	Main 1 Ant.	QPSK	**25.70**	
LTE Band 26	Main 1 Ant.	QPSK	**25.00**	
LTE Band 66	Main 2 Ant.	QPSK	**25.00**	**22.00**
LTE Band 66	Sub 1 Ant.	QPSK	**19.00**	
LTE Band 41	Main 2 Ant.	QPSK	**24.00**	

RF Air interface	Antenna	Mode	Max. RF Output Power (dBm)	Reduced. RF Output Power (dBm)	
				Hotspot back-off (dBm)	RCV back-off (dBm)
NR Band n5	Main 1 Ant.	DFT-s-OFDM QPSK	**24.00**		
NR Band n66	Main 2 Ant.	DFT-s-OFDM QPSK	**24.50**		
NR Band n66	Sub 1 Ant.	DFT-s-OFDM QPSK	**24.00**	**22.00**	**18.00**

Note :.

1. LTE Bands is not support RCV Back-off operation.
2. NR Bands is not support Proximity sensor back-off operation.

Normal WLAN

Band	Mode	Max (dBm)	Reduce (dBm)	Max (dBm)				Reduce (dBm)			
		b	b	a	g	n	ac	a	g	n	ac
2.4GHz	1Ch	18.50	12.00		18.00	17.50			12.00	12.00	
	2-5Ch	19.00	12.00		18.00	18.00			12.00	12.00	
	6Ch	20.00	12.00		18.00	18.00			12.00	12.00	
	7-10Ch	19.00	12.00		18.00	18.00			12.00	12.00	
	11Ch	14.50	12.00		17.00	16.00			12.00	12.00	
	12Ch	8.00	8.00		6.00	6.00			6.00	6.00	
	13Ch	8.00	8.00		6.00	5.50			6.00	5.50	
5GHz (20MHz)	UNII-1			16.00		15.00	15.00	11.00		11.00	11.00
	UNII-2A			16.00		15.00	15.00	11.00		11.00	11.00
	UNII-2C			16.00		15.00	15.00	11.00		11.00	11.00
	UNII-3			16.00		15.00	15.00	11.00		11.00	11.00
5GHz (40MHz)	UNII-1					14.00	14.00			11.00	11.00
	UNII-2A					14.00	14.00			11.00	11.00
	UNII-2C					14.00	14.00			11.00	11.00
	UNII-3					14.00	14.00			11.00	11.00
5GHz (80MHz)	UNII-1						13.00				11.00
	UNII-2A						13.00				11.00
	UNII-2C						13.00				11.00
	UNII-3						13.00				11.00

Note :.

1. This device uses an independent fixed level power reduction mechanism for WLAN mode operations during RCV operation. Detailed descriptions of the power reduction mechanism are included in the operational description.

Bluetooth-Maximum power

Band	Mode	Maximum output power (dBm)
2.4GHz	Bluetooth_GFSK	18.00
2.4GHz	Bluetooth_EDR	13.50
2.4GHz	Bluetooth_1LE	8.50
2.4GHz	Bluetooth_2LE	8.50

6.4. Power Back-off Operation

This device supports multiple power back-off modes: WWAN (Hotspot), WWAN (Proximity sensor), WWAN (ear-jack), WWAN (RCV) and WLAN (RCV). Each of the power back-off operates within specific exposure conditions for certain technologies. For full details on how each power back-off mode operates, refer to the Operational Description.

Power Back-off mode	Technologies Supported	Exposure Conditions Active			
		Head	Body-worn	Hotspot	Product Specific 10-g
WWAN (Hotspot)	GSM 1900 WCDMA Band II & IV LTE Band 2 & 4 & 66 NR Band n66 (Sub.1)	N/A	N/A	✓	N/A
WWAN (Proximity sensor)	GSM 1900 WCDMA Band II & IV LTE Band 2 & 4 & 66	N/A	N/A	N/A	✓
WWAN (Ear-jack)	GSM 1900 WCDMA Band II & IV LTE Band 2 & 4 & 66	N/A	✓	N/A	✓
WWAN (RCV)	NR Band n66 (Sub.1)	✓	N/A	N/A	N/A
WLAN (RCV)	2.4GHz/5GHz WLAN	✓	N/A	N/A	N/A

Note(s):

1. Tune-up Limits for WWAN (Hotspot) and WWAN (Proximity Sensor) are all Reduced Average Powers. Please refer to Sec.9 for all conducted power measurements.
2. WWAN Back-off priority: RCV → Hotspot → Ear-jack → Proximity Sensor
3. Body-worn SAR with ear-jack connected is not required due to Body-worn measured at max power is not over 1.2 W/kg.

Product Specific 10g Adjusted SAR Calculation

Wireless technologies	Max Tune-up Limit (dBm)	Reduced Tune-Up Limit (dBm)	Pow er Factor	Reported SAR Limit (W/kg)
GSM 1900	22.74	21.24	1.41	0.850
WCDMA Band II	25.00	22.00	2.00	0.601
WCDMA Band IV	25.00	22.00	2.00	0.601
LTE Band 2	24.50	22.00	1.78	0.675
LTE Band 4	25.00	22.00	2.00	0.601
LTE Band 66	25.00	22.00	2.00	0.601
NR Band n66 (Sub.1)	24.00	22.00	1.58	0.757

Note(s):

1. Tune-up limit powers for GSM 1900 is frame power(dBm).
2. Hotspot mode supports power reduction. When the measured SAR is scaled to the maximum tune-up limit, the adjusted SAR is < 1.2 W/kg. Therefore, Extremity SAR testing is not required for this band in accordance with KDB 648474 §2.5 b. Refer to §10 for Reported SAR results. If the Reported SAR 1g value in §10 is less than the Reported SAR Limit listed above, then Extremity SAR is not required.
3. LTE 50% RB is scaled up to the Max Tune-Up Limit with MPR included.
4. For Reported SAR limit in above table, it was calculated using Max tune-up Limit & Reduced Tune-up limit & Reported SAR 1.2 W/kg. (Reported SAR Limit = 1.2 W/kg / Power factor, Power factor = 10^((Max tune-up limit – Reduced tune-up limit)/10)

6.5. General LTE SAR Test and Reporting Considerations

Item	Description						
Frequency range, Channel Bandwidth, Numbers and Frequencies	Band 2	Frequency range: 1850 - 1910 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low	18700/ 1860	18675/ 1857.5	18650/ 1855	18625/ 1852.5	18615/ 1851.5	18607/ 1850.7
	Mid	18900/ 1880	18900/ 1880	18900/ 1880	18900/ 1880	18900/ 1880	18900/ 1880
	High	19100/ 1900	19125/ 1902.5	19150/ 1905	19175/ 1907.5	19185/ 1908.5	19193/ 1909.3
	Band 4	Frequency range: 1710 - 1755 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low	20050/ 1720	20025/ 1717.5	20000/ 1715	19975/ 1712.5	19965/ 1711.5	19957/ 1710.7
	Mid	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5
	High	20300/ 1745	20325/ 1747.5	20350/ 1750	20375/ 1752.5	20385/ 1753.5	20393/ 1754.3
	Band 5	Frequency range: 824 - 849 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low			20450/ 829	20425/ 826.5	20415/ 825.5	20407/ 824.7
	Mid			20525/ 836.5	20525/ 836.5	20525/ 836.5	20525/ 836.5
	High			20600/ 844	20625/ 846.5	20635/ 847.5	20643/ 848.3
	Band 12	Frequency range: 699 – 716 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low			23060/ 704	23035/ 701.5	23025/ 700.5	23017/ 699.7
	Mid			23095/ 707.5	23095/ 707.5	23095/ 707.5	23095/ 707.5
	High			23130/ 711	23155/ 713.5	23165/ 714.5	23173/ 715.3
	Band 17	Frequency range: 704 - 716 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low			23780/ 709	23755/ 706.5		
	Mid			23790/ 710	23790/ 710		
	High			23800/ 711	23825/ 713.5		

General LTE SAR Test and Reporting Considerations (Continued)

Band 26	Frequency range: 814 - 849 MHz					
	Channel Bandwidth					
	20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
Low		26765/ 821.5	26740/ 819	26715/ 816.5	26705/ 815.5	26697/ 814.7
Mid		26865/ 831.5	26865/ 831.5	26865/ 831.5	26865/ 831.5	26865/ 831.5
High		26965/ 841.5	26990/ 844	27015/ 846.5	27025/ 847.5	27033/ 848.3

Band 41	Frequency range: 2496 - 2690 MHz					
	Channel Bandwidth					
	20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
Low	39750 / 2506.0					
Low-Mid	40185 / 2549.5					
Mid	40620 / 2593.0					
Mid-High	41055 / 2636.5					
High	41490 / 2680.0					

Band 66	Frequency range: 1710 - 1780 MHz					
	Channel Bandwidth					
	20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
Low	132072/ 1720	132047/ 1717.5	132022/ 1715	131997/ 1712.5	131987/ 1711.5	131979/ 1710.7
Mid	132322/ 1745	132322/ 1745	132322/ 1745	132322/ 1745	132322/ 1745	132322/ 1745
High	132572/ 1770	132597/ 1772.5	132622/ 1775	132647/ 1777.5	132657/ 1778.5	132665/ 1779.3

LTE transmitter and antenna implementation	Refer to Appendix A.
Maximum power reduction (MPR)	**Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3**

Modulation	Channel bandwidth / Transmission bandwidth (N_{RB})						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3
256 QAM	≥ 1						≤ 5

MPR Built-in by design
The manufacturer MPR values are always within the 3GPP maximum MPR allowance but may not follow the default MPR values.
A-MPR (additional MPR) was disabled during SAR testing

Power reduction	Yes
Spectrum plots for RB configurations	A properly configured base station simulator was used for the SAR and power measurements; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.

Notes:

1. Maximum bandwidth does not support at least three non-overlapping channels in certain channel bandwidths. When a device supports Overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing per KDB 941225 D05 SAR for LTE devices.
2. LTE Band 41 test channels in accordance with October 2014 TCB workshop for all channels bandwidths.
3. SAR Testing for LTE was performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).

6.6. LTE (TDD) Considerations

According to KDB 941225 D05 SAR for LTE Devices, for Time-Division Duplex (TDD) systems, SAR must be tested using a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by the defined 3GPP LTE TDD configurations.

LTE TDD Bands support 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations and Table 4.2-1 for Special subframe configurations.

Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$			$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-

Calculated Duty Cycle

Uplink-Downlink Configuration	Downlink-to-Uplink Switch-point Periodicity	Subframe Number										Calculated Duty Cycle (%)
		0	1	2	3	4	5	6	7	8	9	
0	5 ms	D	S	U	U	U	D	S	U	U	U	63.33
1	5 ms	D	S	U	U	D	D	S	U	U	D	43.33
2	5 ms	D	S	U	D	D	D	S	U	D	D	23.33
3	10 ms	D	S	U	U	U	D	D	D	D	D	31.67
4	10 ms	D	S	U	U	D	D	D	D	D	D	21.67
5	10 ms	D	S	U	D	D	D	D	D	D	D	11.67
6	5 ms	D	S	U	U	U	D	S	U	U	D	53.33

Calculated Duty Cycle = Extended cyclic prefix in uplink x (T_s) x # of S + # of U

<u>Example for Calculated Duty Cycle for Uplink-Downlink Configuration 0:</u>
Calculated Duty Cycle = 5120 x [1/(15000 x 2048)] x 2 + 6 ms = 63.33%
where
T_s = 1/(15000 x 2048) seconds

Note(s):
This device supports uplink-downlink configurations 0-6. The configuration with highest duty cycle was used for SAR Testing: configuration 0 at 63.3% duty cycle.

6.7. NR (Sub 6GHz) SAR Test and Reporting Considerations

Item	Description													
Frequency range, Channel Bandwidth, Numbers and Frequencies	Band n5	Frequency range: 824 - 849 MHz												
		Channel Bandwidth (MHz)												
		100	90	80	70	60	50	40	30	25	20	15	10	5
	Low										166800/834	166300/831.5	165800/829	165300/826.5
	Mid										167300/836.5	167300/836.5	167300/836.5	167300/836.5
	High										167800/839	168300/841.5	168800/844	169300/846.5
	Band n66	Frequency range: 1710 - 1780 MHz												
		Channel Bandwidth (MHz)												
		100	90	80	70	60	50	40	30	25	20	15	10	5
	Low										344000/1720	343500/1717.5	343000/1715	342500/1712.5
	Mid										349000/1745	349000/1745	349000/1745	349000/1745
	High										354000/1770	354500/1772.5	355000/1775	355500/1777.5
SCS	15 kHz													
Modulations Supported in UL	DFT-s-OFDM: π/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM CP-OFDM: QPSK, 16QAM, 64QAM, 256QAM													
A-MPR (Additional MPR) disabled for SAR Testing?	Yes													
EN-DC Carrier Aggregation Possible Combinations														
LTE Anchor Bands for NR Band n5	LTE Band 2, 66													
LTE Anchor Bands for NR Band n66 (Main Ant.1)	LTE Band 2													
LTE Anchor Bands for NR Band n66 (Sub Ant.1)	LTE Band 5													

Notes:

1. SAR test for NR bands and LTE anchor Bands were performed separately due to limitations in SAR probe calibration factors. And, Due to test setup limitations, SAR testing for NR was performed using test mode software to establish the connection.
2. NR configurations of SAR test were determined according to Section 5.2 of KDB 941225 D05.
3. All NR Bands has supports both SA and NSA.

7. RF Exposure Conditions (Test Configurations)

Refer to Appendix A for the specific details of the antenna-to-antenna and antenna-to-edge(s) distances.

Wireless technologies	RF Exposure Conditions	Antenaa	DUT-to-User Separation	Test Position	Antenna-to-edge/surface	SAR Required	Note
WWAN	Head	All Main Antennas	0 mm	Left Touch	N/A	Yes	
				Left Tilt (15°)	N/A	Yes	
				Right Touch	N/A	Yes	
				Right Tilt (15°)	N/A	Yes	
	Body	All Main Antennas	15 mm	Rear	N/A	Yes	
				Front	N/A	Yes	
	Hotspot	Main 1 Ant.	10 mm	Rear	< 25 mm	Yes	
				Front	< 25 mm	Yes	
				Edge 1 (Top)	> 25 mm	No	1
				Edge 2 (Right)	< 25 mm	Yes	
				Edge 3 (Bottom)	< 25 mm	Yes	
				Edge 4 (Left)	< 25 mm	Yes	
	Hotspot	Main 2 Ant.	10 mm	Rear	< 25 mm	Yes	
				Front	< 25 mm	Yes	
				Edge 1 (Top)	> 25 mm	No	1
				Edge 2 (Right)	> 25 mm	No	1
				Edge 3 (Bottom)	< 25 mm	Yes	
				Edge 4 (Left)	< 25 mm	Yes	
	Hotspot	Sub 1 Ant.	10 mm	Rear	< 25 mm	Yes	
				Front	< 25 mm	Yes	
				Edge 1 (Top)	< 25 mm	Yes	
				Edge 2 (Right)	< 25 mm	Yes	
				Edge 3 (Bottom)	> 25 mm	No	1
				Edge 4 (Left)	> 25 mm	No	1
	Product Specific 10-g	All Main Antennas	0 mm	Rear	Refer to notes 2 & 3		
				Front			
				Edge 1 (Top)			
				Edge 2 (Right)			
				Edge 3 (Bottom)			
				Edge 4 (Left)			
WLAN/BT&BLE	Head	WiFi/BT 2.4G & WiFi 5G	0 mm	Left Touch	N/A	Yes	
				Left Tilt (15°)	N/A	Yes	
				Right Touch	N/A	Yes	
				Right Tilt (15°)	N/A	Yes	
	Body		15 mm	Rear	N/A	Yes	
				Front	N/A	Yes	
	Hotspot	WiFi/BT 2.4G & WiFi 5G	10 mm	Rear	< 25 mm	Yes	
				Front	< 25 mm	Yes	
				Edge 1 (Top)	< 25 mm	Yes	
				Edge 2 (Right)	> 25 mm	No	1
				Edge 3 (Bottom)	> 25 mm	No	1
				Edge 4 (Left)	< 25 mm	Yes	
	Product Specific 10-g	WiFi/BT 2.4G & WiFi 5G	0 mm	Rear	Refer to notes 2 & 4		
				Front			
				Edge 1 (Top)			
				Edge 2 (Right)			
				Edge 3 (Bottom)			
				Edge 4 (Left)			

Notes:

1. SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 941225 D06 Hot Spot SAR.
2. For Phablet devices: When hotspot mode applies, Product specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.
3. For Phablet devices: When hotspot mode applies and power reduction applies to hotspot mode, Product specific 10-g SAR is required for each test position that has and adjusted SAR to maximum power that is > 1.2 W/kg.
4. For Phablet devices: When hotspot mode is not supported, Product specific 10-g SAR is required for all surfaces and edges with an antenna located at ≤ 25mm from that surface or edge in direct contact with a flat phantom, to address interactive hand use exposure conditions.

8. Dielectric Property Measurements & System Check

8.1. Dielectric Property Measurements

The temperature of the tissue-equivalent medium used during measurement must also be within 18°C to 25°C and within ± 2°C of the temperature when the tissue parameters are characterized.

The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements. The parameters should be re-measured after each 3 – 4 days of use; or earlier if the dielectric parameters can become out of tolerance; for example, when the parameters are marginal at the beginning of the measurement series.

Tissue dielectric parameters were measured at the low, middle and high frequency of each operating frequency range of the test device.

Tissue Dielectric Parameters

FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

Target Frequency (MHz)	Head	
	ε_r	σ (S/m)
150	52.3	0.76
300	45.3	0.87
450	43.5	0.87
835	41.5	0.90
900	41.5	0.97
915	41.5	0.98
1450	40.5	1.20
1610	40.3	1.29
1800 – 2000	40.0	1.40
2450	39.2	1.80
3000	38.5	2.40
5000	36.2	4.45
5100	36.1	4.55
5200	36.0	4.66
5300	35.9	4.76
5400	35.8	4.86
5500	35.6	4.96
5600	35.5	5.07
5700	35.4	5.17
5800	35.3	5.27
6000	35.1	5.48
NOTE: For convenience, permittivity and conductivity values at some frequencies that are not part of the original data from Drossos et al. [B60] or the extension to 5800 MHz are provided (i.e., the values shown in italics). These values were linearly interpolated between the values in this table that are immediately above and below these values, except the values at 6000 MHz that were linearly extrapolated from the values at 3000 MHz and 5800 MHz.		

SAR test were performed in All RF exposure conditions using Head tissue according to TCB workshop note of April. 2019.

IEEE Std 1528-2013

Refer to Table 3 within the IEEE Std 1528-2013

Dielectric Property Measurements Results:

SAR 1 Room

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
2022-06-20	Head 1750	e'	39.4900	Relative Permittivity (ε_r):	39.49	40.08	-1.48	5
		e"	13.6100	Conductivity (σ):	1.32	1.37	-3.26	5
	Head 1710	e'	39.5500	Relative Permittivity (ε_r):	39.55	40.15	-1.48	5
		e"	13.5700	Conductivity (σ):	1.29	1.35	-4.17	5
	Head 1755	e'	39.4700	Relative Permittivity (ε_r):	39.47	40.08	-1.51	5
		e"	13.6000	Conductivity (σ):	1.33	1.37	-3.26	5
2022-06-20	Head 1900	e'	39.1600	Relative Permittivity (ε_r):	39.16	40.00	-2.10	5
		e"	13.5100	Conductivity (σ):	1.43	1.40	1.95	5
	Head 1850	e'	39.1700	Relative Permittivity (ε_r):	39.17	40.00	-2.08	5
		e"	13.4600	Conductivity (σ):	1.38	1.40	-1.10	5
	Head 1910	e'	39.1600	Relative Permittivity (ε_r):	39.16	40.00	-2.10	5
		e"	13.5100	Conductivity (σ):	1.43	1.40	2.48	5
2022-06-22	Head 1750	e'	39.3400	Relative Permittivity (ε_r):	39.34	40.08	-1.86	5
		e"	13.9200	Conductivity (σ):	1.35	1.37	-1.06	5
	Head 1710	e'	39.4100	Relative Permittivity (ε_r):	39.41	40.15	-1.83	5
		e"	14.1300	Conductivity (σ):	1.34	1.35	-0.22	5
	Head 1755	e'	39.3400	Relative Permittivity (ε_r):	39.34	40.08	-1.84	5
		e"	13.9000	Conductivity (σ):	1.36	1.37	-1.12	5
2022-06-22	Head 5250	e'	36.5700	Relative Permittivity (ε_r):	36.57	35.93	1.77	5
		e"	16.5100	Conductivity (σ):	4.82	4.70	2.50	5
	Head 5260	e'	36.6200	Relative Permittivity (ε_r):	36.62	35.92	1.94	5
		e"	16.5400	Conductivity (σ):	4.84	4.71	2.66	5
	Head 5600	e'	36.7200	Relative Permittivity (ε_r):	36.72	35.53	3.34	5
		e"	16.0200	Conductivity (σ):	4.99	5.06	-1.42	5
	Head 5800	e'	36.1700	Relative Permittivity (ε_r):	36.17	35.30	2.46	5
		e"	16.1100	Conductivity (σ):	5.20	5.27	-1.41	5
	Head 5825	e'	36.0700	Relative Permittivity (ε_r):	36.07	35.30	2.18	5
		e"	16.1200	Conductivity (σ):	5.22	5.27	-0.93	5

SAR 6 Room

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
2022-06-07	Head 835	e'	41.4900	Relative Permittivity (ε_r):	41.49	41.50	-0.02	5
		e"	19.5600	Conductivity (σ):	0.91	0.90	0.90	5
	Head 820	e'	41.6600	Relative Permittivity (ε_r):	41.66	41.60	0.14	5
		e"	19.6300	Conductivity (σ):	0.90	0.90	-0.38	5
	Head 850	e'	41.3000	Relative Permittivity (ε_r):	41.30	41.50	-0.48	5
		e"	19.4700	Conductivity (σ):	0.92	0.92	0.57	5
2022-06-08	Head 750	e'	40.9900	Relative Permittivity (ε_r):	40.99	41.96	-2.32	5
		e"	21.1800	Conductivity (σ):	0.88	0.89	-1.10	5
	Head 700	e'	42.3800	Relative Permittivity (ε_r):	42.38	42.22	0.38	5
		e"	21.8200	Conductivity (σ):	0.85	0.89	-4.49	5
	Head 790	e'	40.7200	Relative Permittivity (ε_r):	40.72	41.76	-2.48	5
		e"	21.1900	Conductivity (σ):	0.93	0.90	3.87	5
2022-06-20	Head 835	e'	42.0600	Relative Permittivity (ε_r):	42.06	41.50	1.35	5
		e"	19.1700	Conductivity (σ):	0.89	0.90	-1.11	5
	Head 820	e'	42.2300	Relative Permittivity (ε_r):	42.23	41.60	1.51	5
		e"	19.2100	Conductivity (σ):	0.88	0.90	-2.51	5
	Head 850	e'	41.8900	Relative Permittivity (ε_r):	41.89	41.50	0.94	5
		e"	19.1300	Conductivity (σ):	0.90	0.92	-1.19	5

SAR 7 Room

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
2022-05-24	Head 835	e'	40.2600	Relative Permittivity (ε_r):	40.26	41.50	-2.99	5
		e''	20.0100	Conductivity (σ):	0.93	0.90	3.23	5
	Head 820	e'	40.3000	Relative Permittivity (ε_r):	40.30	41.60	-3.13	5
		e''	20.2700	Conductivity (σ):	0.92	0.90	2.86	5
	Head 850	e'	40.2400	Relative Permittivity (ε_r):	40.24	41.50	-3.04	5
		e''	19.7700	Conductivity (σ):	0.93	0.92	2.12	5
2022-05-30	Head 1900	e'	38.4600	Relative Permittivity (ε_r):	38.46	40.00	-3.85	5
		e''	13.5500	Conductivity (σ):	1.43	1.40	2.25	5
	Head 1850	e'	38.4400	Relative Permittivity (ε_r):	38.44	40.00	-3.90	5
		e''	13.7200	Conductivity (σ):	1.41	1.40	0.81	5
	Head 1910	e'	38.4600	Relative Permittivity (ε_r):	38.46	40.00	-3.85	5
		e''	13.5000	Conductivity (σ):	1.43	1.40	2.41	5
2022-05-31	Head 1750	e'	39.4200	Relative Permittivity (ε_r):	39.42	40.08	-1.66	5
		e''	13.5500	Conductivity (σ):	1.32	1.37	-3.69	5
	Head 1710	e'	39.5800	Relative Permittivity (ε_r):	39.58	40.15	-1.41	5
		e''	13.6000	Conductivity (σ):	1.29	1.35	-3.96	5
	Head 1755	e'	39.3900	Relative Permittivity (ε_r):	39.39	40.08	-1.71	5
		e''	13.5500	Conductivity (σ):	1.32	1.37	-3.61	5
2022-05-31	Head 1900	e'	38.6300	Relative Permittivity (ε_r):	38.63	40.00	-3.42	5
		e''	13.3200	Conductivity (σ):	1.41	1.40	0.51	5
	Head 1850	e'	38.8400	Relative Permittivity (ε_r):	38.84	40.00	-2.90	5
		e''	13.4300	Conductivity (σ):	1.38	1.40	-1.32	5
	Head 1910	e'	38.6000	Relative Permittivity (ε_r):	38.60	40.00	-3.50	5
		e''	13.2900	Conductivity (σ):	1.41	1.40	0.82	5
2022-06-03	Head 2600	e'	38.6400	Relative Permittivity (ε_r):	38.64	39.01	-0.95	5
		e''	13.3200	Conductivity (σ):	1.93	1.96	-1.86	5
	Head 2500	e'	38.8000	Relative Permittivity (ε_r):	38.80	39.14	-0.86	5
		e''	13.3100	Conductivity (σ):	1.85	1.85	-0.21	5
	Head 2700	e'	38.4700	Relative Permittivity (ε_r):	38.47	38.88	-1.07	5
		e''	13.3600	Conductivity (σ):	2.01	2.07	-3.12	5
2022-06-13	Head 1900	e'	39.1600	Relative Permittivity (ε_r):	39.16	40.00	-2.10	5
		e''	13.6000	Conductivity (σ):	1.44	1.40	2.63	5
	Head 1850	e'	39.1200	Relative Permittivity (ε_r):	39.12	40.00	-2.20	5
		e''	13.6300	Conductivity (σ):	1.40	1.40	0.15	5
	Head 1910	e'	39.1600	Relative Permittivity (ε_r):	39.16	40.00	-2.10	5
		e''	13.6100	Conductivity (σ):	1.45	1.40	3.24	5
2022-06-20	Head 1900	e'	38.8000	Relative Permittivity (ε_r):	38.80	40.00	-3.00	5
		e''	13.2300	Conductivity (σ):	1.40	1.40	-0.16	5
	Head 1850	e'	38.7600	Relative Permittivity (ε_r):	38.76	40.00	-3.10	5
		e''	13.3100	Conductivity (σ):	1.37	1.40	-2.20	5
	Head 1910	e'	38.7900	Relative Permittivity (ε_r):	38.79	40.00	-3.03	5
		e''	13.2100	Conductivity (σ):	1.40	1.40	0.21	5
2022-06-20	Head 2450	e'	39.8500	Relative Permittivity (ε_r):	39.85	39.20	1.66	5
		e''	13.6900	Conductivity (σ):	1.86	1.80	3.61	5
	Head 2400	e'	39.9400	Relative Permittivity (ε_r):	39.94	39.30	1.64	5
		e''	13.7200	Conductivity (σ):	1.83	1.75	4.52	5
	Head 2480	e'	39.8200	Relative Permittivity (ε_r):	39.82	39.16	1.68	5
		e''	13.6800	Conductivity (σ):	1.89	1.83	2.95	5

SAR 8 Room

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
2022-06-13	Head 5250	e'	35.9300	Relative Permittivity (ε_r):	35.93	35.93	-0.01	5
		e''	16.1900	Conductivity (σ):	4.73	4.70	0.51	5
	Head 5260	e'	35.9100	Relative Permittivity (ε_r):	35.91	35.92	-0.03	5
		e''	16.1900	Conductivity (σ):	4.74	4.71	0.48	5
	Head 5600	e'	35.1900	Relative Permittivity (ε_r):	35.19	35.53	-0.97	5
		e''	16.3900	Conductivity (σ):	5.10	5.06	0.85	5
	Head 5750	e'	34.9200	Relative Permittivity (ε_r):	34.92	35.36	-1.25	5
		e''	16.4700	Conductivity (σ):	5.27	5.21	1.00	5
	Head 5825	e'	34.8200	Relative Permittivity (ε_r):	34.82	35.30	-1.36	5
		e''	16.4500	Conductivity (σ):	5.33	5.27	1.10	5
2022-06-27	Head 1750	e'	39.5500	Relative Permittivity (ε_r):	39.55	40.08	-1.33	5
		e''	13.9400	Conductivity (σ):	1.36	1.37	-0.92	5
	Head 1710	e'	39.5300	Relative Permittivity (ε_r):	39.53	40.15	-1.53	5
		e''	13.9900	Conductivity (σ):	1.33	1.35	-1.20	5
	Head 1755	e'	39.5500	Relative Permittivity (ε_r):	39.55	40.08	-1.31	5
		e''	13.9300	Conductivity (σ):	1.36	1.37	-0.91	5

SAR 9 Room

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
2022-05-23	Head 1900	e'	40.9000	Relative Permittivity (ε_r):	40.90	40.00	2.25	5
		e''	13.4600	Conductivity (σ):	1.42	1.40	1.57	5
	Head 1850	e'	40.8300	Relative Permittivity (ε_r):	40.83	40.00	2.08	5
		e''	13.6600	Conductivity (σ):	1.41	1.40	0.37	5
	Head 1910	e'	40.8800	Relative Permittivity (ε_r):	40.88	40.00	2.20	5
		e''	13.4400	Conductivity (σ):	1.43	1.40	1.95	5
2022-05-30	Head 835	e'	43.1300	Relative Permittivity (ε_r):	43.13	41.50	3.93	5
		e''	19.7900	Conductivity (σ):	0.92	0.90	2.09	5
	Head 820	e'	43.1100	Relative Permittivity (ε_r):	43.11	41.60	3.62	5
		e''	20.0100	Conductivity (σ):	0.91	0.90	1.55	5
	Head 850	e'	43.1200	Relative Permittivity (ε_r):	43.12	41.50	3.90	5
		e''	19.5500	Conductivity (σ):	0.92	0.92	0.98	5
2022-06-02	Head 750	e'	41.0400	Relative Permittivity (ε_r):	41.04	41.96	-2.20	5
		e''	21.6700	Conductivity (σ):	0.90	0.89	1.19	5
	Head 700	e'	41.1300	Relative Permittivity (ε_r):	41.13	42.22	-2.58	5
		e''	22.9100	Conductivity (σ):	0.89	0.89	0.28	5
	Head 790	e'	40.8800	Relative Permittivity (ε_r):	40.88	41.76	-2.10	5
		e''	20.7400	Conductivity (σ):	0.91	0.90	1.66	5
2022-06-02	Head 835	e'	40.8500	Relative Permittivity (ε_r):	40.85	41.50	-1.57	5
		e''	19.9100	Conductivity (σ):	0.92	0.90	2.71	5
	Head 820	e'	40.8400	Relative Permittivity (ε_r):	40.84	41.60	-1.83	5
		e''	20.1600	Conductivity (σ):	0.92	0.90	2.31	5
	Head 850	e'	40.8600	Relative Permittivity (ε_r):	40.86	41.50	-1.54	5
		e''	19.6900	Conductivity (σ):	0.93	0.92	1.71	5
2022-06-13	Head 2450	e'	37.9800	Relative Permittivity (ε_r):	37.98	39.20	-3.11	5
		e''	13.4500	Conductivity (σ):	1.83	1.80	1.79	5
	Head 2400	e'	38.0400	Relative Permittivity (ε_r):	38.04	39.30	-3.20	5
		e''	13.4100	Conductivity (σ):	1.79	1.75	2.16	5
	Head 2480	e'	37.9600	Relative Permittivity (ε_r):	37.96	39.16	-3.07	5
		e''	13.5200	Conductivity (σ):	1.86	1.83	1.74	5
2022-06-14	Head 2600	e'	39.2800	Relative Permittivity (ε_r):	39.28	39.01	0.69	5
		e''	13.2800	Conductivity (σ):	1.92	1.96	-2.16	5
	Head 2500	e'	39.4200	Relative Permittivity (ε_r):	39.42	39.14	0.72	5
		e''	13.2000	Conductivity (σ):	1.83	1.85	-1.03	5
	Head 2700	e'	39.0900	Relative Permittivity (ε_r):	39.09	38.88	0.53	5
		e''	13.3900	Conductivity (σ):	2.01	2.07	-2.90	5
2022-06-21	Head 835	e'	42.1000	Relative Permittivity (ε_r):	42.10	41.50	1.45	5
		e''	20.1200	Conductivity (σ):	0.93	0.90	3.79	5
	Head 820	e'	42.1600	Relative Permittivity (ε_r):	42.16	41.60	1.34	5
		e''	20.4200	Conductivity (σ):	0.93	0.90	3.63	5
	Head 850	e'	42.0500	Relative Permittivity (ε_r):	42.05	41.50	1.33	5
		e''	19.8500	Conductivity (σ):	0.94	0.92	2.53	5
2022-06-21	Head 1750	e'	40.0000	Relative Permittivity (ε_r):	40.00	40.08	-0.21	5
		e''	13.8900	Conductivity (σ):	1.35	1.37	-1.27	5
	Head 1710	e'	40.0600	Relative Permittivity (ε_r):	40.06	40.15	-0.21	5
		e''	14.0500	Conductivity (σ):	1.34	1.35	-0.78	5
	Head 1755	e'	40.0000	Relative Permittivity (ε_r):	40.00	40.08	-0.19	5
		e''	13.8700	Conductivity (σ):	1.35	1.37	-1.33	5
2022-06-27	Head 1900	e'	40.3100	Relative Permittivity (ε_r):	40.31	40.00	0.78	5
		e''	13.7400	Conductivity (σ):	1.45	1.40	3.68	5
	Head 1850	e'	40.3000	Relative Permittivity (ε_r):	40.30	40.00	0.75	5
		e''	13.7600	Conductivity (σ):	1.42	1.40	1.10	5
	Head 1910	e'	40.3000	Relative Permittivity (ε_r):	40.30	40.00	0.75	5
		e''	13.7300	Conductivity (σ):	1.46	1.40	4.15	5

8.2. System Check

SAR system verification is required to confirm measurement accuracy, according to the tissue dielectric media, probe calibration points and other system operating parameters required for measuring the SAR of a test device. The system verification must be performed for each frequency band and within the valid range of each probe calibration point required for testing the device. The same SAR probe(s) and tissue-equivalent media combinations used with each specific SAR system for system verification must be used for device testing. When multiple probe calibration points are required to cover substantially large transmission bands, independent system verifications are required for each probe calibration point. A system verification must be performed before each series of SAR measurements using the same probe calibration point and tissue-equivalent medium. Additional system verification should be considered according to the conditions of the tissue-equivalent medium and measured tissue dielectric parameters, typically every three to four days when the liquid parameters are re-measured or sooner when marginal liquid parameters are used at the beginning of a series of measurements.

System Performance Check Measurement Conditions:

- The measurements were performed in the flat section of the TWIN SAM or ELI phantom, shell thickness: 2.0 ±0.2 mm (bottom plate) filled with Body or Head simulating liquid of the following parameters.
- The depth of tissue-equivalent liquid in a phantom must be ≥ 15.0 cm for SAR measurements ≤ 3 GHz and ≥ 10.0 cm for measurements > 3 GHz.
- The DASY system with an E-Field Probe was used for the measurements.
- The dipole was mounted on the small tripod so that the dipole feed point was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10 mm (above 1 GHz) and 15 mm (below 1 GHz) from dipole center to the simulating liquid surface.
- The coarse grid with a grid spacing of 15 mm was aligned with the dipole.
  For 5 GHz band - The coarse grid with a grid spacing of 10 mm was aligned with the dipole.
- Special 7x7x7 (below 3 GHz) and/or 8x8x7 (above 3 GHz) fine cube was chosen for the cube.
- Distance between probe sensors and phantom surface was set to 2.5 mm.
  For 5 GHz band - Distance between probe sensors and phantom surface was set to 1.4 mm
- The dipole input power (forward power) was 100 mW.
- The results are normalized to 1 W input power.

Reference Target SAR Values

The reference SAR values can be obtained from the calibration certificate of system validation dipoles.

System Dipole	Serial No.	Cal. Date	Cal. Due Date	Target SAR Values (W/kg)	
				1g/10g	Head
D750V3	1205	4-27-2021	4-27-2023	1g	8.66
				10g	5.65
D835V2	4d174	3-17-2021	3-17-2023	1g	9.70
				10g	6.29
D835V2	4d194	3-24-2022	3-24-2023	1g	9.77
				10g	6.39
D1750V2	1180	4-27-2021	4-27-2023	1g	36.40
				10g	19.10
D1750V2	1125	2-24-2022	2-24-2023	1g	36.80
				10g	19.40
D1900V2	5d190	11-24-2020	11-24-2022	1g	40.10
				10g	20.70
D2450V2	960	3-24-2022	3-24-2023	1g	51.90
				10g	24.00
D2600V2	1178	4-21-2021	4-21-2023	1g	56.60
				10g	25.40
D2600V2	1097	9-29-2021	9-29-2023	1g	57.10
				10g	25.50
D5GHzV2	1184	12-3-2020	12-3-2022	1g	79.10
				10g	22.70
				1g	82.40
				10g	23.30
				1g	79.90
				10g	22.60

Note(s):

1. For System Validation Dipole, Calibration interval applied every 2 years according to referencing KDB 865664 guidance.
2. Refer to Appendix F that mentioned about justification for Extended SAR Dipole Calibrations.
3. All equipments were used until Cal.Due data.

System Check Results

The 1-g and 10-g SAR measured with a reference dipole, using the required tissue-equivalent medium at the test frequency, must be within 10% of the manufacturer calibrated dipole SAR target.

SAR 1 Room

Date Tested	System Dipole		T.S. Liquid		Measured Results		Target (Ref. Value)	Delta ±10 %	Plot No.
	Type	Serial #			Zoom Scan to 100 mW	Normalize to 1 W			
2022-06-20	D1750V2	1125	Head	1g	3.70	37.0	36.80	0.54	
				10g	1.92	19.2	19.40	-1.03	
2022-06-20	D1900V2	5d190	Head	1g	4.22	42.2	40.10	5.24	1
				10g	2.13	21.3	20.70	2.90	
2022-06-22	D1750V2	1125	Head	1g	3.79	37.9	36.80	2.99	
				10g	2.01	20.1	19.40	3.61	
2022-06-22	D5GHzV2 (5250)	1209	Head	1g	7.57	75.7	78.00	-2.95	
				10g	2.25	22.5	22.40	0.45	
2022-06-22	D5GHzV2 (5600)	1209	Head	1g	8.06	80.6	80.90	-0.37	
				10g	2.36	23.6	23.10	2.16	
2022-06-22	D5GHzV2 (5800)	1209	Head	1g	7.93	79.3	79.00	0.38	
				10g	2.32	23.2	22.40	3.57	

SAR 6 Room

Date Tested	System Dipole		T.S. Liquid		Measured Results		Target (Ref. Value)	Delta ±10 %	Plot No.
	Type	Serial #			Zoom Scan to 100 mW	Normalize to 1 W			
2022-06-07	D835V2	4d174	Head	1g	0.98	9.8	9.70	0.62	
				10g	0.64	6.4	6.29	1.59	
2022-06-08	D750V3	1205	Head	1g	0.83	8.3	8.66	-4.16	2
				10g	0.56	5.6	5.65	-1.59	
2022-06-20	D835V2	4d194	Head	1g	1.01	10.1	9.77	3.38	
				10g	0.66	6.6	6.39	3.60	

SAR 7 Room

Date Tested	System Dipole		T.S. Liquid		Measured Results		Target (Ref. Value)	Delta ±10 %	Plot No.
	Type	Serial #			Zoom Scan to 100 mW	Normalize to 1 W			
2022-05-24	D835V2	4d174	Head	1g	1.02	10.2	9.70	5.15	3
				10g	0.62	6.2	6.29	-1.75	
2022-05-30	D1900V2	5d190	Head	1g	4.09	40.9	40.10	2.00	
				10g	2.08	20.8	20.70	0.48	
2022-05-31	D1750V2	1180	Head	1g	3.40	34.0	36.40	-6.59	4
				10g	1.78	17.8	19.10	-6.81	
2022-05-31	D1900V2	5d190	Head	1g	4.09	40.9	40.10	2.00	
				10g	2.08	20.8	20.70	0.48	
2022-06-03	D2600V2	1097	Head	1g	5.96	59.6	57.10	4.38	
				10g	2.66	26.6	25.50	4.31	
2022-06-13	D1900V2	5d190	Head	1g	4.25	42.5	40.10	5.99	
				10g	2.18	21.8	20.70	5.31	
2022-06-20	D1900V2	5d190	Head	1g	4.11	41.1	40.10	2.49	
				10g	2.13	21.3	20.70	2.90	
2022-06-20	D2450V2	960	Head	1g	5.52	55.2	51.90	6.36	5
				10g	2.57	25.7	24.00	7.08	

SAR 8 Room

Date Tested	System Dipole		T.S. Liquid		Measured Results		Target (Ref. Value)	Delta ±10 %	Plot No.
	Type	Serial #			Zoom Scan to 100 mW	Normalize to 1 W			
2022-06-13	D5GHzV2 (5250)	1209	Head	1g	7.94	79.4	78.00	1.79	
				10g	2.29	22.9	22.40	2.23	
2022-06-13	D5GHzV2 (5600)	1209	Head	1g	8.44	84.4	80.90	4.33	
				10g	2.44	24.4	23.10	5.63	
2022-06-13	D5GHzV2 (5800)	1209	Head	1g	8.36	83.6	79.00	5.82	6
				10g	2.40	24.0	22.40	7.14	
2022-06-27	D1750V2	1125	Head	1g	3.51	35.1	36.80	-4.62	
				10g	1.86	18.6	19.40	-4.12	

SAR 9 Room

Date Tested	System Dipole		T.S. Liquid		Measured Results		Target (Ref. Value)	Delta ±10 %	Plot No.
	Type	Serial #			Zoom Scan to 100 mW	Normalize to 1 W			
2022-05-23	D1900V2	5d190	Head	1g	3.93	39.3	40.10	-2.00	
				10g	2.03	20.3	20.70	-1.93	
2022-05-30	D835V2	4d174	Head	1g	0.99	9.9	9.70	2.06	
				10g	0.63	6.3	6.29	0.16	
2022-06-02	D750V3	1205	Head	1g	0.90	9.0	8.66	3.46	
				10g	0.59	5.9	5.65	4.60	
2022-06-02	D835V2	4d174	Head	1g	0.99	9.9	9.70	1.86	
				10g	0.65	6.5	6.29	2.70	
2022-06-13	D2450V2	960	Head	1g	5.50	55.0	51.90	5.97	
				10g	2.55	25.5	24.00	6.25	
2022-06-14	D2600V2	1178	Head	1g	5.23	52.3	56.60	-7.60	7
				10g	2.35	23.5	25.40	-7.48	
2022-06-21	D835V2	4d194	Head	1g	0.95	9.5	9.77	-2.97	
				10g	0.61	6.1	6.39	-3.91	
2022-06-21	D1750V2	1125	Head	1g	3.44	34.4	36.80	-6.52	
				10g	1.83	18.3	19.40	-5.67	
2022-06-27	D1900V2	5d190	Head	1g	3.77	37.7	40.10	-5.99	8
				10g	1.95	19.5	20.70	-5.80	

9. Conducted Output Power Measurements

9.1. GSM

Per KDB 941225 D01 3G SAR Procedures:

SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.

GSM850 Measured Results

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Maximum Average Power (dBm)			
					Measured		Tune-up Limit	
					Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr
GSM (Voice)	CS1	1	128	824.2	32.97	23.94	34.00	24.97
			190	836.6	33.39	24.36		
			251	848.8	33.44	24.41		
GPRS (GMSK)	CS1	1	128	824.2	31.60	22.57	34.00	24.97
			190	836.6	31.73	22.70		
			251	848.8	32.09	23.06		
		2	128	824.2	31.00	24.98	32.00	**25.98**
			190	836.6	31.40	25.38		
			251	848.8	31.76	25.74		
		3	128	824.2	29.65	25.39	30.00	25.74
			190	836.6	29.54	25.28		
			251	848.8	29.94	25.68		
		4	128	824.2	27.57	24.56	28.50	25.49
			190	836.6	27.78	24.77		
			251	848.8	27.96	24.95		
EGPRS (8PSK)	MCS5	1	128	824.2	26.62	17.59	27.50	18.47
			190	836.6	27.31	18.28		
			251	848.8	27.40	18.37		
		2	128	824.2	24.87	18.85	26.00	19.98
			190	836.6	25.22	19.20		
			251	848.8	25.30	19.28		
		3	128	824.2	22.95	18.69	24.00	19.74
			190	836.6	23.33	19.07		
			251	848.8	23.32	19.06		
		4	128	824.2	21.93	18.92	23.00	19.99
			190	836.6	22.09	19.08		
			251	848.8	22.52	19.51		

Notes:

The worst-case configuration and mode for SAR testing is determined to be as follows:

- GMSK (GPRS) mode with 2 time slots for Max power, based on the Tune-up Procedure. Refer to §6.3.
- SAR is not required for EGPRS (8PSK) mode because the maximum output power and tune-up limit is ≤ 1/4dB higher than GMSK GPRS or the adjusted SAR of the highest reported SAR of GMSK GPRS is ≤ 1.2W/kg.

GSM1900 Measured Results

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Maximum Average Power (dBm)				Reduced Average Power (dBm) Hotspot back-off				Reduced Average Power (dBm) Proximity sensor back-off			
					Measured		Tune-up Limit		Measured		Tune-up Limit		Measured		Tune-up Limit	
					Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr
GSM (Voice)	CS1	1	512	1850.2	29.49	20.46	31.00	21.97	27.78	18.75	29.00	19.97	27.80	18.77	29.00	19.97
			661	1880.0	30.29	21.26			28.44	19.41			28.46	19.43		
			810	1909.8	30.06	21.03			28.41	19.38			28.42	19.39		
GPRS (GMSK)	CS1	1	512	1850.2	29.53	20.50	31.00	21.97	27.70	18.67	29.00	19.97	27.74	18.71	29.00	19.97
			661	1880.0	30.20	21.17			28.28	19.25			28.35	19.32		
			810	1909.8	29.92	20.89			28.20	19.17			28.29	19.26		
		2	512	1850.2	25.82	19.80	28.00	21.98	25.85	19.83	27.00	20.98	25.91	19.89	27.00	20.98
			661	1880.0	27.04	21.02			26.85	20.83			26.92	20.90		
			810	1909.8	26.20	20.18			25.91	19.89			25.98	19.96		
		3	512	1850.2	24.90	20.64	27.00	**22.74**	23.50	19.24	25.50	**21.24**	23.52	19.26	25.50	**21.24**
			661	1880.0	26.01	21.75			24.66	20.40			24.74	20.48		
			810	1909.8	25.33	21.07			23.60	19.34			23.50	19.24		
		4	512	1850.2	23.13	20.12	25.00	21.99	22.60	19.59	23.00	19.99	22.66	19.65	23.00	19.99
			661	1880.0	24.99	21.98			22.64	19.63			22.72	19.71		
			810	1909.8	23.23	20.22			22.61	19.60			22.68	19.67		
EGPRS (8PSK)	MCS5	1	512	1850.2	25.32	16.29	27.00	17.97	24.49	15.46	25.00	15.97	24.55	15.52	25.00	15.97
			661	1880.0	25.92	16.89			24.68	15.65			24.75	15.72		
			810	1909.8	25.80	16.77			24.56	15.53			24.61	15.58		
		2	512	1850.2	23.59	17.57	25.00	18.98	22.46	16.44	23.00	16.98	22.53	16.51	23.00	16.98
			661	1880.0	23.87	17.85			22.61	16.59			22.67	16.65		
			810	1909.8	23.72	17.70			22.56	16.54			22.63	16.61		
		3	512	1850.2	22.06	17.80	23.50	19.24	20.35	16.09	21.00	16.74	20.42	16.16	21.00	16.74
			661	1880.0	22.24	17.98			20.78	16.52			20.85	16.59		
			810	1909.8	22.22	17.96			20.56	16.30			20.62	16.36		
		4	512	1850.2	21.00	17.99	22.00	18.99	19.17	16.16	20.00	16.99	19.24	16.23	20.00	16.99
			661	1880.0	21.37	18.36			19.31	16.30			19.37	16.36		
			810	1909.8	21.23	18.22			19.35	16.34			19.42	16.41		

Notes:

The worst-case configuration and mode for SAR testing is determined to be as follows:

- GMSK (GPRS) mode with 3 time slots for Max power and Reduced power, based on the Tune-up Procedure. Refer to §6.3.
- SAR is not required for EGPRS (8PSK) mode because the maximum output power and tune-up limit is ≤ 1/4dB higher than GMSK GPRS or the adjusted SAR of the highest reported SAR of GMSK GPRS is ≤ 1.2W/kg.

9.2. W-CDMA

Release 99 Setup Procedures used to establish the test signals

The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS34.121-1 specification. The DUT supports power Class 3, which has a nominal maximum output power of 24 dBm (+1.7/-3.7).

Mode	Subtest	Rel99
WCDMA General Settings	Loopback Mode	Test Mode 2
	Rel99 RMC	12.2kbps RMC
	Power Control Algorithm	Algorithm2
	βc/βd	8/15

HSDPA Setup Procedures used to establish the test signals

The following 4 Sub-tests were completed according to Release 5 procedures in section 5.2 of 3GPP TS34.121. A summary of these settings are illustrated below:

	Mode	HSDPA	HSDPA	HSDPA	HSDPA
	Subtest	1	2	3	4
W-CDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set 1			
	Power Control Algorithm	Algorithm 2			
	βc	2/15	11/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	Bd (SF)	64			
	βc/βd	2/15	11/15	15/8	15/4
	βhs	4/15	24/15	30/15	30/15
	MPR (dB)	0	0	0.5	0.5
HSDPA Specific Settings	D_{ACK}	8			
	D_{NAK}	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback (Table 5.2B.4)	4ms			
	CQI Repetition Factor (Table 5.2B.4)	2			
	Ahs=βhs/βc	30/15			

HSPA (HSDPA & HSUPA) Setup Procedures used to establish the test signals

The following 5 Sub-tests were completed according to Release 6 procedures in table C,11.1.3 of 3GPP TS 34.121-1 v13.
A summary of these settings are illustrated below:

	Mode	HSPA				
	Subtest	1	2	3	4	5
WCDMA General Settings	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2 kbps RMC				
	HSDPA FRC	H-Set 1				
	HSUPA Test	HSPA				
	Power Control Algorithm	Algorithm 2				Algorithm 1
	βc	11/15	6/15	15/15	2/15	15/15
	βd	15/15	15/15	9/15	15/15	0
	βec	209/225	12/15	30/15	2/15	5/15
	βc/βd	11/15	6/15	15/9	2/15	-
	βhs	22/15	12/15	30/15	4/15	5/15
	βed	1309/225	94/75	47/15	56/75	47/15
	CM (dB)	1	3	2	3	1
	MPR (dB)	0	2	1	2	0
HSDPA Specific Settings	DACK	8				0
	DNAK	8				0
	DCQI	8				0
	Ack-Nack repetition factor	3				
	CQI Feedback (Table 5.2B.4)	4ms				
	CQI Repetition Factor (Table 5.2B.4)	2				
	Ahs = βhs/βc	30/15				
HSUPA Specific Settings	E-DPDCH	6	8	8	5	0
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	12
	ETFCI (from 34.121 Table C.11.1.3)	75	67	92	71	67
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E-TFCIs	5	5	2	5	1
	Reference E-TFCI	11	11	11	11	67
	Reference E-TFCI PO	4	4	4	4	18
	Reference E-TFCI	67	67	92	67	67
	Reference E-TFCI PO	18	18	18	18	18
	Reference E-TFCI	71	71	71	71	71
	Reference E-TFCI PO	23	23	23	23	23
	Reference E-TFCI	75	75	75	75	75
	Reference E-TFCI PO	26	26	26	26	26
	Reference E-TFCI	81	81	81	81	81
	Reference E-TFCI PO	27	27	27	27	27
	Maximum Channelization Codes	2xSF2				SF4

DC-HSDPA Setup Procedures used to establish the test signals

The following tests were completed according to procedures in section 7.3.13 of 3GPP TS34.108 v9.5.0. A summary of these settings are illustrated below:

Downlink Physical Channels are set as per 3GPP TS34.121-1 v9.0.0 E.5.0

Table E.5.0: Levels for HSDPA connection setup

Parameter During Connection setup	Unit	Value
P-CPICH_Ec/Ior	dB	-10
P-CCPCH and SCH_Ec/Ior	dB	-12
PICH _Ec/Ior	dB	-15
HS-PDSCH	dB	off
HS-SCCH_1	dB	off
DPCH_Ec/Ior	dB	-5
OCNS_Ec/Ior	dB	-3.1

Call is set up as per 3GPP TS34.108 v9.5.0 sub clause 7.3.13

The configurations of the fixed reference channels for HSDPA RF tests are described in 3GPP TS 34.121, annex C for FDD and 3GPP TS 34.122.

Table C.8.1.12: Fixed Reference Channel H-Set 12

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Processes	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK

Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table.
Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.

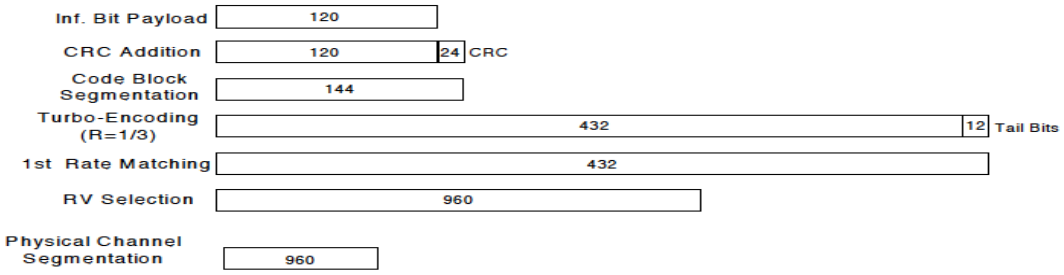


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

The following 4 Sub-tests for HSDPA were completed according to Release 8 procedures in section 5.2 of 3GPP TS34.121. A summary of subtest settings are illustrated below:

	Mode	HSDPA	HSDPA	HSDPA	HSDPA
	Subtest	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set 12			
	Power Control Algorithm	Algorithm2			
	βc	2/15	11/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	βd (SF)	64			
	βc/βd	2/15	11/15	15/8	15/4
	βhs	4/15	24/15	30/15	30/15
	MPR (dB)	0	0	0.5	0.5
HSDPA Specific Settings	DACK	8			
	DNAK	8			
	DCQI	8			
	Ack-Nack Repetition factor	3			
	CQI Feedback	4ms			
	CQI Repetition Factor	2			
	Ahs = βhs/ βc	30/15			

HSPA+

HSPA+ is only supported to down link. Therefore, the RF conducted power is not measured.

W-CDMA Band II Measured Results

Mode		UL Ch No.	Freq. (MHz)	Maximum Average Power (dBm)			Reduced Average Power (dBm) Hotspot back-off			Reduced Average Power (dBm) Proximity sensor back-off		
				Measured Pwr	MPR	Tune-up Limit	Measured Pwr	MPR	Tune-up Limit	Measured Pwr	MPR	Tune-up Limit
Release 99	Rel 99 (RMC, 12.2 kbps)	9262	1852.4	23.33	N/A	25.00	20.30	N/A	22.00	20.29	N/A	22.00
		9400	1880.0	23.43			20.43			20.42		
		9538	1907.6	23.41			20.36			20.36		
HSDPA	Subtest 1	9262	1852.4	22.33	0	24.50	19.31	0	21.50	19.34	0	21.50
		9400	1880.0	22.42			19.41			19.43		
		9538	1907.6	22.41			19.37			19.38		
	Subtest 2	9262	1852.4	22.34	0	24.50	19.29	0	21.50	19.32	0	21.50
		9400	1880.0	22.42			19.38			19.40		
		9538	1907.6	22.40			19.33			19.36		
	Subtest 3	9262	1852.4	21.82	0.5	24.00	18.80	0.5	21.00	18.83	0.5	21.00
		9400	1880.0	21.93			18.89			18.91		
		9538	1907.6	21.90			18.84			18.86		
	Subtest 4	9262	1852.4	21.85	0.5	24.00	18.82	0.5	21.00	18.85	0.5	21.00
		9400	1880.0	21.95			18.92			18.93		
		9538	1907.6	21.92			18.85			18.87		
HSUPA	Subtest 1	9262	1852.4	22.31	0	24.50	19.31	0	21.50	19.30	0	21.50
		9400	1880.0	22.40			19.41			19.43		
		9538	1907.6	22.35			19.35			19.33		
	Subtest 2	9262	1852.4	20.31	2	22.50	17.33	2	19.50	17.31	2	19.50
		9400	1880.0	20.38			17.40			17.39		
		9538	1907.6	20.33			17.36			17.32		
	Subtest 3	9262	1852.4	21.31	1	23.50	18.31	1	20.50	18.32	1	20.50
		9400	1880.0	21.38			18.41			18.39		
		9538	1907.6	21.33			18.34			18.34		
	Subtest 4	9262	1852.4	20.30	2	22.50	17.32	2	19.50	17.30	2	19.50
		9400	1880.0	20.41			17.39			17.40		
		9538	1907.6	20.34			17.34			17.34		
	Subtest 5	9262	1852.4	22.10	0	24.50	19.02	0	21.50	19.01	0	21.50
		9400	1880.0	22.10			19.05			19.06		
		9538	1907.6	22.00			19.03			19.04		
DC-HSDPA	Subtest 1	9262	1852.4	22.31	0	23.00	19.31	0	20.00	19.32	0	20.00
		9400	1880.0	22.43			19.42			19.44		
		9538	1907.6	22.43			19.39			19.40		
	Subtest 2	9262	1852.4	22.35	0	23.00	19.31	0	20.00	19.30	0	20.00
		9400	1880.0	22.43			19.40			19.40		
		9538	1907.6	22.42			19.36			19.34		
	Subtest 3	9262	1852.4	21.84	0.5	22.50	18.82	0.5	19.50	18.81	0.5	19.50
		9400	1880.0	21.94			18.90			18.90		
		9538	1907.6	21.95			18.88			18.87		
	Subtest 4	9262	1852.4	21.85	0.5	22.50	18.84	0.5	19.50	18.81	0.5	19.50
		9400	1880.0	21.95			18.93			18.91		
		9538	1907.6	21.94			18.87			18.89		

W-CDMA Band IV Measured Results

Mode		UL Ch No.	Freq. (MHz)	Maximum Average Power (dBm)			Reduced Average Power (dBm) Hotspot back-off			Reduced Average Power (dBm) Proximity sensor back-off		
				Measured Pwr	MPR	Tune-up Limit	Measured Pwr	MPR	Tune-up Limit	Measured Pwr	MPR	Tune-up Limit
Release 99	Rel 99 (RMC, 12.2 kbps)	1312	1712.4	23.35	N/A	25.00	20.77	N/A	22.00	20.81	N/A	22.00
		1413	1732.6	23.51			20.96			20.95		
		1513	1752.6	23.69			21.08			21.10		
HSDPA	Subtest 1	1312	1712.4	22.40	0	24.50	19.81	0	21.50	19.42	0	21.50
		1413	1732.6	22.56			19.91			19.51		
		1513	1752.6	22.70			20.07			19.68		
	Subtest 2	1312	1712.4	22.37	0	24.50	19.79	0	21.50	19.41	0	21.50
		1413	1732.6	22.54			19.94			19.51		
		1513	1752.6	22.68			20.08			19.64		
	Subtest 3	1312	1712.4	21.84	0.5	24.00	19.32	0.5	21.00	18.89	0.5	21.00
		1413	1732.6	22.02			19.42			19.02		
		1513	1752.6	22.17			19.54			19.16		
	Subtest 4	1312	1712.4	21.87	0.5	24.00	19.29	0.5	21.00	18.92	0.5	21.00
		1413	1732.6	22.01			19.44			19.00		
		1513	1752.6	22.18			19.57			19.16		
HSUPA	Subtest 1	1312	1712.4	22.32	0	24.50	19.37	0	21.50	19.37	0	21.50
		1413	1732.6	22.46			19.49			19.50		
		1513	1752.6	22.64			19.66			19.65		
	Subtest 2	1312	1712.4	20.36	2	22.50	17.39	2	19.50	17.37	2	19.50
		1413	1732.6	20.48			17.51			17.53		
		1513	1752.6	20.64			17.67			17.65		
	Subtest 3	1312	1712.4	21.35	1	23.50	18.40	1	20.50	18.38	1	20.50
		1413	1732.6	21.55			18.53			18.54		
		1513	1752.6	21.71			18.69			18.71		
	Subtest 4	1312	1712.4	20.44	2	22.50	17.43	2	19.50	17.44	2	19.50
		1413	1732.6	20.56			17.58			17.59		
		1513	1752.6	20.72			17.73			17.72		
	Subtest 5	1312	1712.4	22.41	0	24.50	19.44	0	21.50	19.43	0	21.50
		1413	1732.6	22.60			19.57			19.56		
		1513	1752.6	22.74			19.71			19.71		
DC-HSDPA	Subtest 1	1312	1712.4	22.42	0	24.00	19.82	0	21.00	19.42	0	21.00
		1413	1732.6	22.54			19.94			19.54		
		1513	1752.6	22.69			20.09			19.70		
	Subtest 2	1312	1712.4	22.43	0	24.00	19.87	0	21.00	19.42	0	21.00
		1413	1732.6	22.55			19.94			19.52		
		1513	1752.6	22.66			20.10			19.66		
	Subtest 3	1312	1712.4	21.91	0.5	23.50	19.34	0.5	20.50	18.92	0.5	20.50
		1413	1732.6	22.02			19.43			19.03		
		1513	1752.6	22.18			19.57			19.18		
	Subtest 4	1312	1712.4	21.92	0.5	23.50	19.35	0.5	20.50	18.89	0.5	20.50
		1413	1732.6	22.01			19.45			19.01		
		1513	1752.6	22.16			19.61			19.18		

W-CDMA Band V Measured Results

Mode		UL Ch No.	Freq. (MHz)	Maximum Average Power (dBm)		
				Measured Pwr	MPR	Tune-up Limit
Release 99	Rel 99 (RMC, 12.2 kbps)	4132	826.4	24.23	N/A	25.00
		4183	836.6	24.40		
		4233	846.6	24.37		
HSDPA	Subtest 1	4132	826.4	23.20	0	24.50
		4183	836.6	23.41		
		4233	846.6	23.38		
	Subtest 2	4132	826.4	23.26	0	24.50
		4183	836.6	23.41		
		4233	846.6	23.35		
	Subtest 3	4132	826.4	22.76	0.5	24.00
		4183	836.6	22.90		
		4233	846.6	22.86		
	Subtest 4	4132	826.4	22.73	0.5	24.00
		4183	836.6	22.91		
		4233	846.6	22.83		
HSUPA	Subtest 1	4132	826.4	23.21	0	24.50
		4183	836.6	23.36		
		4233	846.6	23.33		
	Subtest 2	4132	826.4	21.21	2	22.50
		4183	836.6	21.36		
		4233	846.6	21.30		
	Subtest 3	4132	826.4	22.22	1	23.50
		4183	836.6	22.35		
		4233	846.6	22.31		
	Subtest 4	4132	826.4	21.23	2	22.50
		4183	836.6	21.40		
		4233	846.6	21.31		
	Subtest 5	4132	826.4	22.78	0	24.50
		4183	836.6	22.94		
		4233	846.6	22.88		
DC-HSDPA	Subtest 1	4132	826.4	23.23	0	24.00
		4183	836.6	23.40		
		4233	846.6	23.41		
	Subtest 2	4132	826.4	23.21	0	24.00
		4183	836.6	23.38		
		4233	846.6	23.35		
	Subtest 3	4132	826.4	22.72	0.5	23.50
		4183	836.6	22.90		
		4233	846.6	22.85		
	Subtest 4	4132	826.4	22.73	0.5	23.50
		4183	836.6	22.89		
		4233	846.6	22.83		

9.3. LTE

The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS36.101 specification.

UE Power Class: 3 (23 +/- 2dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101.

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3

Modulation	Channel bandwidth / Transmission bandwidth (N_{RB})						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3
256 QAM	≥ 1						≤ 5

The allowed A-MPR values specified below in Table 6.2.4.-1 of 3GPP TS36.101 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signaling Value of “NS_01”.

Table 6.2.4-1: Additional Maximum Power Reduction (A-MPR)

Network Signalling value	Requirements (subclause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks (N_{RB})	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	N/A

<u>Maximum Output Power (Tune-up Limit) for LTE</u>

According to April 2015 TCB workshop, SAR test exclusion can be applied for testing overlapping LTE bands as follows:

a) The maximum output power, including tolerance, for the smaller band must be ≤ the larger band to qualify for the SAR test exclusion.
b) The channel bandwidth and other operating parameters for the smaller band must be fully supported by the larger band.

- LTE Band 4 (1710 – 1755 MHz) is covered by LTE Band 66 (1710 – 1780 MHz)
- LTE Band 17 (704 – 716 MHz) is covered by LTE Band 12 (699 – 716 MHz)

Maximum bandwidth does not support at least three non-overlapping channels in certain channel bandwidths.

When a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing per KDB 941225 D05 SAR for LTE Devices.

LTE QPSK configuration has the highest maximum average output power per 3GPP standard.

SAR measurement is not required for Higher order modulations. When the highest maximum output power for Higher order modulations are ≤ 0.5 dB higher than the QPSK or when the reported SAR for QPSK configuration is ≤ 1.45 W/kg.

1. Max power

LTE Band 2 (Main. 2 Ant.) Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)				
				Measured Pwr (dBm)			MPR	Tune-up Limit
				18700	18900	19100		
				1860 MHz	1880 MHz	1900 MHz		
20 MHz	QPSK	1	0	24.04	24.04	24.20	0.0	24.50
		1	49	24.06	24.00	24.00	0.0	24.50
		1	99	24.12	24.18	24.05	0.0	24.50
		50	0	23.20	23.14	23.16	1.0	23.50
		50	24	23.22	23.15	23.25	1.0	23.50
		50	50	23.22	23.24	23.15	1.0	23.50
		100	0	23.19	23.11	23.19	1.0	23.50
	16QAM	1	0	23.42	23.39	23.44	1.0	23.50
		1	49	23.40	23.37	23.40	1.0	23.50
		1	99	23.44	23.41	23.46	1.0	23.50
		50	0	22.25	22.17	22.15	2.0	22.50
		50	24	22.24	22.17	22.14	2.0	22.50
		50	50	22.23	22.21	22.16	2.0	22.50
		100	0	22.26	22.13	22.17	2.0	22.50
	64QAM	1	0	22.48	22.40	22.42	2.0	22.50
		1	49	22.44	22.42	22.38	2.0	22.50
		1	99	22.47	22.43	22.45	2.0	22.50
		50	0	21.25	21.21	21.27	3.0	21.50
		50	24	21.30	21.18	21.25	3.0	21.50
		50	50	21.26	21.25	21.22	3.0	21.50
		100	0	21.24	21.16	21.21	3.0	21.50
	256QAM	1	0	19.37	19.08	19.15	5.0	19.50
		1	49	19.32	19.08	19.08	5.0	19.50
		1	99	19.36	19.11	19.14	5.0	19.50
		50	0	19.24	19.18	19.25	5.0	19.50
		50	24	19.25	19.15	19.23	5.0	19.50
		50	50	19.24	19.21	19.21	5.0	19.50
		100	0	19.19	19.12	19.23	5.0	19.50
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				18675	18900	19125		
				1857.5 MHz	1880 MHz	1902.5 MHz		
15 MHz	QPSK	1	0	24.11	23.99	24.03	0.0	24.50
		1	37	24.08	23.96	23.63	0.0	24.50
		1	74	24.15	23.95	23.56	0.0	24.50
		36	0	23.19	23.11	23.06	1.0	23.50
		36	20	23.17	23.09	23.01	1.0	23.50
		36	39	23.20	23.15	22.87	1.0	23.50
		75	0	23.16	23.09	23.06	1.0	23.50
	16QAM	1	0	23.48	23.08	23.37	1.0	23.50
		1	37	23.40	23.10	23.11	1.0	23.50
		1	74	23.35	23.07	23.07	1.0	23.50
		36	0	22.22	22.16	22.11	2.0	22.50
		36	20	22.19	22.14	22.12	2.0	22.50
		36	39	22.23	22.20	22.15	2.0	22.50
		75	0	22.18	22.11	22.07	2.0	22.50
	64QAM	1	0	22.30	22.44	22.31	2.0	22.50
		1	37	22.25	22.47	22.00	2.0	22.50
		1	74	22.30	22.46	21.96	2.0	22.50
		36	0	21.26	21.07	21.12	3.0	21.50
		36	20	21.25	21.04	20.97	3.0	21.50
		36	39	21.25	21.13	20.83	3.0	21.50
		75	0	21.18	21.10	21.04	3.0	21.50
	256QAM	1	0	19.02	19.33	19.49	5.0	19.50
		1	37	18.98	19.31	19.48	5.0	19.50
		1	74	19.01	19.34	19.46	5.0	19.50
		36	0	19.18	19.08	19.09	5.0	19.50
		36	20	19.16	19.05	19.09	5.0	19.50
		36	39	19.16	19.12	19.17	5.0	19.50
		75	0	18.99	19.12	19.12	5.0	19.50

LTE Band 2 (Main. 2 Ant) Measured Results_(Continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				18650	18900	19150		
				1855 MHz	1880 MHz	1905 MHz		
10 MHz	QPSK	1	0	24.11	24.19	23.90	0.0	24.50
		1	25	24.06	24.17	23.57	0.0	24.50
		1	49	24.03	24.11	23.50	0.0	24.50
		25	0	23.31	23.21	23.08	1.0	23.50
		25	12	23.30	23.21	22.87	1.0	23.50
		25	25	23.27	23.23	22.90	1.0	23.50
		50	0	23.27	23.19	23.01	1.0	23.50
	16QAM	1	0	23.25	23.13	23.23	1.0	23.50
		1	25	23.15	23.15	23.03	1.0	23.50
		1	49	23.07	23.17	23.02	1.0	23.50
		25	0	22.40	22.27	22.22	2.0	22.50
		25	12	22.41	22.25	22.16	2.0	22.50
		25	25	22.36	22.30	22.20	2.0	22.50
		50	0	22.35	22.19	22.18	2.0	22.50
	64QAM	1	0	22.34	22.41	22.30	2.0	22.50
		1	25	22.32	22.48	21.94	2.0	22.50
		1	49	22.31	22.32	21.93	2.0	22.50
		25	0	21.32	21.28	21.11	3.0	21.50
		25	12	21.33	21.23	20.89	3.0	21.50
		25	25	21.28	21.27	20.91	3.0	21.50
		50	0	21.28	21.15	20.98	3.0	21.50
	256QAM	1	0	19.04	19.14	19.45	5.0	19.50
		1	25	18.93	19.17	19.33	5.0	19.50
		1	49	19.08	19.13	19.35	5.0	19.50
		25	0	19.34	19.23	19.21	5.0	19.50
		25	12	19.29	19.21	19.23	5.0	19.50
		25	25	19.23	19.22	19.21	5.0	19.50
		50	0	19.21	19.15	19.14	5.0	19.50

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				18625	18900	19175		
				1852.5 MHz	1880 MHz	1907.5 MHz		
5 MHz	QPSK	1	0	24.18	24.21	23.93	0.0	24.50
		1	12	24.15	24.13	23.56	0.0	24.50
		1	24	24.14	24.10	23.60	0.0	24.50
		12	0	23.35	23.20	22.92	1.0	23.50
		12	7	23.35	23.28	22.88	1.0	23.50
		12	13	23.25	23.21	22.87	1.0	23.50
		25	0	23.28	23.18	22.91	1.0	23.50
	16QAM	1	0	23.21	23.37	23.42	1.0	23.50
		1	12	23.12	23.30	23.18	1.0	23.50
		1	24	23.20	23.32	23.25	1.0	23.50
		12	0	22.37	22.31	22.22	2.0	22.50
		12	7	22.35	22.38	22.20	2.0	22.50
		12	13	22.27	22.28	22.21	2.0	22.50
		25	0	22.27	22.20	22.18	2.0	22.50
	64QAM	1	0	22.45	22.38	21.99	2.0	22.50
		1	12	22.50	22.39	21.59	2.0	22.50
		1	24	22.45	22.40	21.68	2.0	22.50
		12	0	21.19	21.24	20.95	3.0	21.50
		12	7	21.27	21.29	20.89	3.0	21.50
		12	13	21.17	21.22	20.88	3.0	21.50
		25	0	21.18	21.12	20.86	3.0	21.50
	256QAM	1	0	19.38	19.18	18.94	5.0	19.50
		1	12	19.29	19.28	18.92	5.0	19.50
		1	24	19.33	19.18	18.82	5.0	19.50
		12	0	19.24	19.17	19.22	5.0	19.50
		12	7	19.25	19.26	19.24	5.0	19.50
		12	13	19.15	19.16	19.15	5.0	19.50
		25	0	19.20	19.14	19.22	5.0	19.50

LTE Band 2 (Main. 2 Ant) Measured Results_(Continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				18615	18900	19185		
				1851.5 MHz	1880 MHz	1908.5 MHz		
3 MHz	QPSK	1	0	24.22	24.21	23.84	0.0	24.50
		1	8	24.09	24.13	23.57	0.0	24.50
		1	14	24.08	24.14	23.58	0.0	24.50
		8	0	23.24	23.17	22.88	1.0	23.50
		8	4	23.27	23.23	22.86	1.0	23.50
		8	7	23.23	23.23	22.86	1.0	23.50
		15	0	23.20	23.16	22.87	1.0	23.50
	16QAM	1	0	23.28	23.17	23.18	1.0	23.50
		1	8	23.11	22.99	23.01	1.0	23.50
		1	14	23.11	23.07	23.09	1.0	23.50
		8	0	22.35	22.29	22.11	2.0	22.50
		8	4	22.35	22.33	22.13	2.0	22.50
		8	7	22.30	22.35	22.16	2.0	22.50
		15	0	22.21	22.16	22.17	2.0	22.50
	64QAM	1	0	22.46	22.46	22.07	2.0	22.50
		1	8	22.38	22.44	21.80	2.0	22.50
		1	14	22.40	22.42	21.83	2.0	22.50
		8	0	21.13	21.16	20.93	3.0	21.50
		8	4	21.10	21.26	20.96	3.0	21.50
		8	7	21.07	21.23	20.97	3.0	21.50
		15	0	21.23	21.08	20.97	3.0	21.50
	256QAM	1	0	19.21	19.45	19.02	5.0	19.50
		1	8	19.23	19.33	18.92	5.0	19.50
		1	14	19.09	19.46	18.84	5.0	19.50
		8	0	19.34	19.21	19.12	5.0	19.50
		8	4	19.36	19.27	19.14	5.0	19.50
		8	7	19.35	19.25	19.10	5.0	19.50
		15	0	19.23	19.12	19.23	5.0	19.50

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				18607	18900	19193		
				1850.7 MHz	1880 MHz	1909.3 MHz		
1.4 MHz	QPSK	1	0	24.12	24.10	23.74	0.0	24.50
		1	3	24.19	24.09	23.66	0.0	24.50
		1	5	24.20	24.01	23.55	0.0	24.50
		3	0	24.17	24.15	23.56	0.0	24.50
		3	1	24.20	24.22	23.58	0.0	24.50
		3	3	24.19	24.18	23.55	0.0	24.50
		6	0	23.22	23.20	22.85	1.0	23.50
	16QAM	1	0	23.11	23.45	22.80	1.0	23.50
		1	3	23.16	23.47	22.82	1.0	23.50
		1	5	23.19	23.46	22.79	1.0	23.50
		3	0	23.42	23.41	22.98	1.0	23.50
		3	1	23.41	23.34	23.01	1.0	23.50
		3	3	23.39	23.33	23.01	1.0	23.50
		6	0	22.40	22.12	22.26	2.0	22.50
	64QAM	1	0	22.40	22.35	22.05	2.0	22.50
		1	3	22.48	22.36	21.96	2.0	22.50
		1	5	22.38	22.50	21.80	2.0	22.50
		3	0	22.25	22.50	21.83	2.0	22.50
		3	1	22.19	22.49	21.84	2.0	22.50
		3	3	22.19	22.49	21.81	2.0	22.50
		6	0	21.26	21.18	21.10	3.0	21.50
	256QAM	1	0	19.32	19.39	19.41	5.0	19.50
		1	3	19.36	19.49	19.49	5.0	19.50
		1	5	19.24	19.30	19.32	5.0	19.50
		3	0	19.34	19.17	19.13	5.0	19.50
		3	1	19.27	19.19	19.23	5.0	19.50
		3	3	19.25	19.12	19.23	5.0	19.50
		6	0	19.29	19.17	19.19	5.0	19.50

LTE Band 2 (Sub. 2 Ant.) Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)				
				Measured Pwr (dBm)			MPR	Tune-up Limit
				18700	18900	19100		
				1860 MHz	1880 MHz	1900 MHz		
20 MHz	QPSK	1	0	19.48	19.45	19.51	0.0	20.00
		1	49	19.41	19.41	19.39	0.0	20.00
		1	99	19.39	19.63	19.31	0.0	20.00
		50	0	18.66	18.73	18.7	0.5	19.50
		50	24	18.65	18.73	18.64	0.5	19.50
		50	50	18.58	18.74	18.65	0.5	19.50
		100	0	18.63	18.64	18.67	0.5	19.50
	16QAM	1	0	18.58	18.92	19.19	0.5	19.50
		1	49	18.67	19.07	19.06	0.5	19.50
		1	99	18.52	19.11	19.03	0.5	19.50
		50	0	17.63	17.69	17.73	1.5	18.50
		50	24	17.6	17.77	17.63	1.5	18.50
		50	50	17.59	17.74	17.58	1.5	18.50
		100	0	17.67	17.54	17.77	1.5	18.50
	64QAM	1	0	17.79	17.92	18.01	1.5	18.50
		1	49	17.73	18.01	17.93	1.5	18.50
		1	99	17.66	18.04	17.85	1.5	18.50
		50	0	16.75	16.42	16.83	2.5	17.50
		50	24	16.74	16.47	16.72	2.5	17.50
		50	50	16.66	16.53	16.64	2.5	17.50
		100	0	16.66	16.29	16.77	2.5	17.50
	256QAM	1	0	14.65	14.49	14.36	5.0	15.00
		1	49	14.57	14.61	14.24	5.0	15.00
		1	99	14.44	14.85	14.29	5.0	15.00
		50	0	14.64	14.38	14.86	5.0	15.00
		50	24	14.63	14.39	14.8	5.0	15.00
		50	50	14.54	14.55	14.72	5.0	15.00
		100	0	14.62	14.42	14.8	5.0	15.00
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				18675	18900	19125		
				1857.5 MHz	1880 MHz	1902.5 MHz		
15 MHz	QPSK	1	0	19.36	19.33	19.39	0.0	20.00
		1	37	19.29	19.29	19.27	0.0	20.00
		1	74	19.27	19.51	19.19	0.0	20.00
		36	0	18.54	18.61	18.58	1.0	19.00
		36	20	18.53	18.61	18.52	1.0	19.00
		36	39	18.46	18.62	18.53	1.0	19.00
		75	0	18.51	18.52	18.55	1.0	19.00
	16QAM	1	0	18.46	18.80	18.90	1.0	19.00
		1	37	18.55	18.95	18.94	1.0	19.00
		1	74	18.40	18.99	18.91	1.0	19.00
		36	0	17.51	17.57	17.61	2.0	18.00
		36	20	17.48	17.65	17.51	2.0	18.00
		36	39	17.47	17.62	17.46	2.0	18.00
		75	0	17.55	17.42	17.65	2.0	18.00
	64QAM	1	0	17.67	17.80	17.89	2.0	18.00
		1	37	17.61	17.89	17.81	2.0	18.00
		1	74	17.54	17.92	17.73	2.0	18.00
		36	0	16.63	16.30	16.71	3.0	17.00
		36	20	16.62	16.35	16.60	3.0	17.00
		36	39	16.54	16.41	16.52	3.0	17.00
		75	0	16.54	16.17	16.65	3.0	17.00
	256QAM	1	0	14.53	14.37	14.24	5.0	15.00
		1	37	14.45	14.49	14.12	5.0	15.00
		1	74	14.32	14.73	14.17	5.0	15.00
		36	0	14.52	14.26	14.74	5.0	15.00
		36	20	14.51	14.27	14.68	5.0	15.00
		36	39	14.42	14.43	14.60	5.0	15.00
		75	0	14.50	14.30	14.68	5.0	15.00

LTE Band 2 (Sub. 2 Ant.) Measured Results_(Continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pw r (dBm)			MPR	Tune-up Limit
				18650	18900	19150		
				1855 MHz	1880 MHz	1905 MHz		
10 MHz	QPSK	1	0	19.37	19.35	19.46	0.0	20.00
		1	25	19.30	19.31	19.34	0.0	20.00
		1	49	19.28	19.53	19.26	0.0	20.00
		25	0	18.55	18.63	18.65	1.0	19.00
		25	12	18.54	18.63	18.59	1.0	19.00
		25	25	18.47	18.64	18.60	1.0	19.00
		50	0	18.52	18.54	18.62	1.0	19.00
	16QAM	1	0	18.47	18.82	18.77	1.0	19.00
		1	25	18.56	18.97	18.97	1.0	19.00
		1	49	18.41	18.96	18.98	1.0	19.00
		25	0	17.52	17.59	17.68	2.0	18.00
		25	12	17.49	17.67	17.58	2.0	18.00
		25	25	17.48	17.64	17.53	2.0	18.00
		50	0	17.56	17.44	17.72	2.0	18.00
	64QAM	1	0	17.68	17.82	17.96	2.0	18.00
		1	25	17.62	17.91	17.88	2.0	18.00
		1	49	17.55	17.94	17.80	2.0	18.00
		25	0	16.64	16.32	16.78	3.0	17.00
		25	12	16.63	16.37	16.67	3.0	17.00
		25	25	16.55	16.43	16.59	3.0	17.00
		50	0	16.55	16.19	16.72	3.0	17.00
	256QAM	1	0	14.54	14.39	14.31	5.0	15.00
		1	25	14.46	14.51	14.19	5.0	15.00
		1	49	14.33	14.75	14.24	5.0	15.00
		25	0	14.53	14.28	14.81	5.0	15.00
		25	12	14.52	14.29	14.75	5.0	15.00
		25	25	14.43	14.45	14.67	5.0	15.00
		50	0	14.51	14.32	14.75	5.0	15.00

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pw r (dBm)			MPR	Tune-up Limit
				18625	18900	19175		
				1852.5 MHz	1880 MHz	1907.5 MHz		
5 MHz	QPSK	1	0	19.42	19.44	19.47	0.0	20.00
		1	12	19.35	19.40	19.35	0.0	20.00
		1	24	19.33	19.62	19.27	0.0	20.00
		12	0	18.60	18.72	18.66	1.0	19.00
		12	7	18.59	18.72	18.60	1.0	19.00
		12	13	18.52	18.73	18.61	1.0	19.00
		25	0	18.57	18.63	18.63	1.0	19.00
	16QAM	1	0	18.52	18.91	18.88	1.0	19.00
		1	12	18.61	18.77	18.79	1.0	19.00
		1	24	18.46	18.97	18.99	1.0	19.00
		12	0	17.57	17.68	17.69	2.0	18.00
		12	7	17.54	17.76	17.59	2.0	18.00
		12	13	17.53	17.73	17.54	2.0	18.00
		25	0	17.61	17.53	17.73	2.0	18.00
	64QAM	1	0	17.73	17.91	17.97	2.0	18.00
		1	12	17.67	18.00	17.89	2.0	18.00
		1	24	17.60	17.65	17.81	2.0	18.00
		12	0	16.69	16.41	16.79	3.0	17.00
		12	7	16.68	16.46	16.68	3.0	17.00
		12	13	16.60	16.52	16.60	3.0	17.00
		25	0	16.60	16.28	16.73	3.0	17.00
	256QAM	1	0	14.59	14.48	14.32	5.0	15.00
		1	12	14.51	14.60	14.20	5.0	15.00
		1	24	14.38	14.84	14.25	5.0	15.00
		12	0	14.58	14.37	14.82	5.0	15.00
		12	7	14.57	14.38	14.76	5.0	15.00
		12	13	14.48	14.54	14.68	5.0	15.00
		25	0	14.56	14.41	14.76	5.0	15.00

LTE Band 2 (Sub. 2 Ant.) Measured Results_(Continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pw r (dBm)			MPR	Tune-up Limit
				18615	18900	19185		
				1851.5 MHz	1880 MHz	1908.5 MHz		
3 MHz	QPSK	1	0	19.27	19.25	19.35	0.0	20.00
		1	8	19.20	19.21	19.23	0.0	20.00
		1	14	19.18	19.43	19.15	0.0	20.00
		8	0	18.45	18.53	18.54	1.0	19.00
		8	4	18.44	18.53	18.48	1.0	19.00
		8	7	18.37	18.54	18.49	1.0	19.00
		15	0	18.42	18.44	18.51	1.0	19.00
	16QAM	1	0	18.37	18.72	18.86	1.0	19.00
		1	8	18.46	18.87	18.90	1.0	19.00
		1	14	18.31	18.91	18.87	1.0	19.00
		8	0	17.42	17.49	17.57	2.0	18.00
		8	4	17.39	17.57	17.47	2.0	18.00
		8	7	17.38	17.54	17.42	2.0	18.00
		15	0	17.46	17.34	17.61	2.0	18.00
	64QAM	1	0	17.58	17.72	17.85	2.0	18.00
		1	8	17.52	17.81	17.77	2.0	18.00
		1	14	17.45	17.84	17.69	2.0	18.00
		8	0	16.54	16.22	16.67	3.0	17.00
		8	4	16.53	16.27	16.56	3.0	17.00
		8	7	16.45	16.33	16.48	3.0	17.00
		15	0	16.45	16.09	16.61	3.0	17.00
	256QAM	1	0	14.44	14.29	14.20	5.0	15.00
		1	8	14.36	14.41	14.08	5.0	15.00
		1	14	14.23	14.65	14.13	5.0	15.00
		8	0	14.43	14.18	14.70	5.0	15.00
		8	4	14.42	14.19	14.64	5.0	15.00
		8	7	14.33	14.35	14.56	5.0	15.00
		15	0	14.41	14.22	14.64	5.0	15.00

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pw r (dBm)			MPR	Tune-up Limit
				18607	18900	19193		
				1850.7 MHz	1880 MHz	1909.3 MHz		
1.4 MHz	QPSK	1	0	19.35	19.35	19.44	0.0	20.00
		1	3	19.28	19.31	19.32	0.0	20.00
		1	5	19.26	19.53	19.24	0.0	20.00
		3	0	18.53	18.63	18.63	0.0	20.00
		3	1	18.52	18.63	18.57	0.0	20.00
		3	3	18.45	18.64	18.58	0.0	20.00
		6	0	18.50	18.54	18.60	1.0	19.00
	16QAM	1	0	18.45	18.82	18.86	1.0	19.00
		1	3	18.54	18.97	18.99	1.0	19.00
		1	5	18.39	18.54	18.96	1.0	19.00
		3	0	17.50	17.59	17.66	1.0	19.00
		3	1	17.47	17.67	17.56	1.0	19.00
		3	3	17.46	17.64	17.51	1.0	19.00
		6	0	17.54	17.44	17.70	2.0	18.00
	64QAM	1	0	17.66	17.82	17.94	2.0	18.00
		1	3	17.60	17.91	17.86	2.0	18.00
		1	5	17.53	17.94	17.78	2.0	18.00
		3	0	16.62	16.32	16.76	2.0	18.00
		3	1	16.61	16.37	16.65	2.0	18.00
		3	3	16.53	16.43	16.57	2.0	18.00
		6	0	16.53	16.19	16.70	3.0	17.00
	256QAM	1	0	14.52	14.39	14.29	5.0	15.00
		1	3	14.44	14.51	14.17	5.0	15.00
		1	5	14.31	14.75	14.22	5.0	15.00
		3	0	14.51	14.28	14.79	5.0	15.00
		3	1	14.50	14.29	14.73	5.0	15.00
		3	3	14.41	14.45	14.65	5.0	15.00
		6	0	14.49	14.32	14.73	5.0	15.00

LTE Band 5 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)				
				Measured Pwr (dBm)			MPR	Tune-up Limit
				[redacted]	20525	[redacted]		
				[redacted]	836.5 MHz	[redacted]		
10 MHz	QPSK	1	0	[redacted]	24.46	[redacted]	0.0	24.70
		1	25	[redacted]	24.50	[redacted]	0.0	24.70
		1	49	[redacted]	24.48	[redacted]	0.0	24.70
		25	0	[redacted]	23.56	[redacted]	1.0	23.70
		25	12	[redacted]	23.57	[redacted]	1.0	23.70
		25	25	[redacted]	23.59	[redacted]	1.0	23.70
		50	0	[redacted]	23.56	[redacted]	1.0	23.70
	16QAM	1	0	[redacted]	23.44	[redacted]	1.0	23.70
		1	25	[redacted]	23.43	[redacted]	1.0	23.70
		1	49	[redacted]	23.45	[redacted]	1.0	23.70
		25	0	[redacted]	22.64	[redacted]	2.0	22.70
		25	12	[redacted]	22.63	[redacted]	2.0	22.70
		25	25	[redacted]	22.68	[redacted]	2.0	22.70
		50	0	[redacted]	22.59	[redacted]	2.0	22.70
	64QAM	1	0	[redacted]	22.69	[redacted]	2.0	22.70
		1	25	[redacted]	22.68	[redacted]	2.0	22.70
		1	49	[redacted]	22.70	[redacted]	2.0	22.70
		25	0	[redacted]	21.59	[redacted]	3.0	21.70
		25	12	[redacted]	21.61	[redacted]	3.0	21.70
		25	25	[redacted]	21.66	[redacted]	3.0	21.70
		50	0	[redacted]	21.58	[redacted]	3.0	21.70
	256QAM	1	0	[redacted]	19.47	[redacted]	5.0	19.70
		1	25	[redacted]	19.59	[redacted]	5.0	19.70
		1	49	[redacted]	19.52	[redacted]	5.0	19.70
		25	0	[redacted]	19.63	[redacted]	5.0	19.70
		25	12	[redacted]	19.66	[redacted]	5.0	19.70
		25	25	[redacted]	19.70	[redacted]	5.0	19.70
		50	0	[redacted]	19.57	[redacted]	5.0	19.70

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				20425	20525	20625		
				826.5 MHz	836.5 MHz	846.5 MHz		
5 MHz	QPSK	1	0	24.03	24.40	24.32	0.0	24.70
		1	12	24.00	24.38	24.23	0.0	24.70
		1	24	24.06	24.38	24.20	0.0	24.70
		12	0	23.09	23.25	23.20	1.0	23.70
		12	7	23.16	23.24	23.20	1.0	23.70
		12	13	23.14	23.31	23.25	1.0	23.70
		25	0	23.11	23.25	23.19	1.0	23.70
	16QAM	1	0	23.14	23.45	23.70	1.0	23.70
		1	12	22.97	23.39	23.68	1.0	23.70
		1	24	23.14	23.47	23.67	1.0	23.70
		12	0	22.11	22.31	22.39	2.0	22.70
		12	7	22.15	22.33	22.36	2.0	22.70
		12	13	22.17	22.35	22.41	2.0	22.70
		25	0	22.11	22.28	22.25	2.0	22.70
	64QAM	1	0	22.27	22.55	22.44	2.0	22.70
		1	12	22.39	22.58	22.60	2.0	22.70
		1	24	22.40	22.56	22.50	2.0	22.70
		12	0	20.98	21.43	21.22	3.0	21.70
		12	7	21.11	21.41	21.21	3.0	21.70
		12	13	21.09	21.48	21.27	3.0	21.70
		25	0	21.14	21.28	21.22	3.0	21.70
	256QAM	1	0	18.83	19.38	19.39	5.0	19.70
		1	12	18.90	19.48	19.32	5.0	19.70
		1	24	18.89	19.44	19.42	5.0	19.70
		12	0	19.07	19.30	19.24	5.0	19.70
		12	7	19.16	19.31	19.27	5.0	19.70
		12	13	19.13	19.34	19.28	5.0	19.70
		25	0	19.17	19.31	19.19	5.0	19.70

LTE Band 5 Measured Results (Continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				20415	20525	20635		
				825.5 MHz	836.5 MHz	847.5 MHz		
3 MHz	QPSK	1	0	24.20	24.53	24.41	0.0	24.70
		1	8	24.06	24.42	24.28	0.0	24.70
		1	14	24.25	24.51	24.36	0.0	24.70
		8	0	23.16	23.42	23.40	1.0	23.70
		8	4	23.26	23.45	23.48	1.0	23.70
		8	7	23.31	23.53	23.45	1.0	23.70
		15	0	23.28	23.43	23.43	1.0	23.70
	16QAM	1	0	23.15	23.69	23.50	1.0	23.70
		1	8	23.04	23.59	23.39	1.0	23.70
		1	14	23.19	23.68	23.44	1.0	23.70
		8	0	22.25	22.28	22.44	2.0	22.70
		8	4	22.35	22.53	22.55	2.0	22.70
		8	7	22.38	22.60	22.54	2.0	22.70
		15	0	22.32	22.49	22.43	2.0	22.70
	64QAM	1	0	22.07	22.42	22.63	2.0	22.70
		1	8	22.05	22.62	22.70	2.0	22.70
		1	14	22.14	22.49	22.62	2.0	22.70
		8	0	21.28	21.50	21.53	3.0	21.70
		8	4	21.38	21.52	21.62	3.0	21.70
		8	7	21.36	21.58	21.61	3.0	21.70
		15	0	21.32	21.52	21.44	3.0	21.70
	256QAM	1	0	19.23	19.26	19.56	5.0	19.70
		1	8	19.35	19.28	19.62	5.0	19.70
		1	14	19.31	19.29	19.63	5.0	19.70
		8	0	19.31	19.32	19.42	5.0	19.70
		8	4	19.45	19.37	19.53	5.0	19.70
		8	7	19.50	19.47	19.54	5.0	19.70
		15	0	19.35	19.50	19.49	5.0	19.70

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				20407	20525	20643		
				824.7 MHz	836.5 MHz	848.3 MHz		
1.4 MHz	QPSK	1	0	24.01	24.32	24.35	0.0	24.70
		1	3	24.05	24.34	24.40	0.0	24.70
		1	5	24.04	24.41	24.34	0.0	24.70
		3	0	24.08	24.29	24.31	0.0	24.70
		3	1	24.17	24.37	24.35	0.0	24.70
		3	3	24.19	24.38	24.34	0.0	24.70
		6	0	23.15	23.36	23.31	1.0	23.70
	16QAM	1	0	23.54	23.35	23.49	1.0	23.70
		1	3	23.61	23.50	23.59	1.0	23.70
		1	5	23.58	23.37	23.45	1.0	23.70
		3	0	23.32	23.56	23.34	1.0	23.70
		3	1	23.33	23.64	23.39	1.0	23.70
		3	3	23.32	23.65	23.44	1.0	23.70
		6	0	22.07	22.54	22.48	2.0	22.70
	64QAM	1	0	22.10	22.56	22.30	2.0	22.70
		1	3	22.24	22.69	22.32	2.0	22.70
		1	5	22.17	22.59	22.29	2.0	22.70
		3	0	22.25	22.44	22.30	2.0	22.70
		3	1	22.46	22.43	22.25	2.0	22.70
		3	3	22.45	22.52	22.20	2.0	22.70
		6	0	21.31	21.43	21.35	3.0	21.70
	256QAM	1	0	19.51	19.50	19.47	5.0	19.70
		1	3	19.70	19.61	19.54	5.0	19.70
		1	5	19.52	19.57	19.44	5.0	19.70
		3	0	19.28	19.31	19.48	5.0	19.70
		3	1	19.35	19.37	19.37	5.0	19.70
		3	3	19.37	19.35	19.40	5.0	19.70
		6	0	19.30	19.33	19.43	5.0	19.70

LTE Band 12 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)				
				Measured Pwr (dBm)			MPR	Tune-up Limit
				23060	23095	23130		
				704 MHz	707.5 MHz	711 MHz		
10 MHz	QPSK	1	0		24.66		0.0	25.70
		1	25		24.72		0.0	25.70
		1	49		24.70		0.0	25.70
		25	0		23.73		1.0	24.70
		25	12		23.75		1.0	24.70
		25	25		23.79		1.0	24.70
		50	0		23.75		1.0	24.70
	16QAM	1	0		24.04		1.0	24.70
		1	25		24.10		1.0	24.70
		1	49		24.13		1.0	24.70
		25	0		22.76		2.0	23.70
		25	12		22.81		2.0	23.70
		25	25		22.83		2.0	23.70
		50	0		22.76		2.0	23.70
	64QAM	1	0		22.82		2.0	23.70
		1	25		22.95		2.0	23.70
		1	49		22.96		2.0	23.70
		25	0		21.86		3.0	22.70
		25	12		21.83		3.0	22.70
		25	25		21.88		3.0	22.70
		50	0		21.79		3.0	22.70
	256QAM	1	0		19.38		5.0	20.70
		1	25		19.54		5.0	20.70
		1	49		19.63		5.0	20.70
		25	0		19.80		5.0	20.70
		25	12		19.82		5.0	20.70
		25	25		19.84		5.0	20.70
		50	0		19.78		5.0	20.70

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				23035	23095	23155		
				701.5 MHz	707.5 MHz	713.5 MHz		
5 MHz	QPSK	1	0	24.42	24.58	24.71	0.0	25.70
		1	12	24.52	24.73	24.70	0.0	25.70
		1	24	24.58	24.73	24.61	0.0	25.70
		12	0	23.55	23.71	23.68	1.0	24.70
		12	7	23.66	23.72	23.80	1.0	24.70
		12	13	23.63	23.78	23.73	1.0	24.70
		25	0	23.60	23.69	23.64	1.0	24.70
	16QAM	1	0	23.63	23.73	23.90	1.0	24.70
		1	12	23.49	23.76	23.73	1.0	24.70
		1	24	23.68	23.88	23.67	1.0	24.70
		12	0	22.61	22.74	22.74	2.0	23.70
		12	7	22.68	22.76	22.80	2.0	23.70
		12	13	22.62	22.81	22.80	2.0	23.70
		25	0	22.57	22.63	22.65	2.0	23.70
	64QAM	1	0	22.55	22.89	23.03	2.0	23.70
		1	12	22.73	23.00	23.16	2.0	23.70
		1	24	22.67	23.01	23.12	2.0	23.70
		12	0	21.69	21.81	21.69	3.0	22.70
		12	7	21.70	21.79	21.73	3.0	22.70
		12	13	21.79	21.84	21.75	3.0	22.70
		25	0	21.63	21.70	21.65	3.0	22.70
	256QAM	1	0	19.72	19.72	19.79	5.0	20.70
		1	12	19.92	19.92	19.88	5.0	20.70
		1	24	19.81	19.83	19.87	5.0	20.70
		12	0	19.74	19.73	19.72	5.0	20.70
		12	7	19.71	19.76	19.76	5.0	20.70
		12	13	19.77	19.79	19.78	5.0	20.70
		25	0	19.73	19.73	19.67	5.0	20.70

LTE Band 12 Measured Results (Continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				23025	23095	23165		
				700.5 MHz	707.5 MHz	714.5 MHz		
3 MHz	QPSK	1	0	24.45	24.69	24.69	0.0	25.70
		1	8	24.38	24.62	24.57	0.0	25.70
		1	14	24.40	24.67	24.61	0.0	25.70
		8	0	23.47	23.71	23.75	1.0	24.70
		8	4	23.58	23.79	23.77	1.0	24.70
		8	7	23.58	23.81	23.70	1.0	24.70
		15	0	23.54	23.79	23.70	1.0	24.70
	16QAM	1	0	23.56	23.81	23.80	1.0	24.70
		1	8	23.45	23.76	23.70	1.0	24.70
		1	14	23.45	23.77	23.64	1.0	24.70
		8	0	22.53	22.77	22.77	2.0	23.70
		8	4	22.62	22.84	22.80	2.0	23.70
		8	7	22.65	22.84	22.79	2.0	23.70
		15	0	22.54	22.74	22.68	2.0	23.70
	64QAM	1	0	22.91	23.05	23.67	2.0	23.70
		1	8	23.00	23.01	22.91	2.0	23.70
		1	14	22.92	23.08	23.08	2.0	23.70
		8	0	21.60	21.68	22.64	3.0	22.70
		8	4	21.68	21.75	22.65	3.0	22.70
		8	7	21.68	21.74	22.67	3.0	22.70
		15	0	21.60	21.85	21.73	3.0	22.70
	256QAM	1	0	19.91	19.73	19.53	5.0	20.70
		1	8	19.89	19.88	19.61	5.0	20.70
		1	14	19.91	19.79	19.72	5.0	20.70
		8	0	19.59	19.83	19.75	5.0	20.70
		8	4	19.69	20.00	19.75	5.0	20.70
		8	7	19.67	19.96	19.77	5.0	20.70
		15	0	19.63	19.88	19.68	5.0	20.70

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				23017	23095	23173		
				699.7 MHz	707.5 MHz	715.3 MHz		
1.4 MHz	QPSK	1	0	24.34	24.56	23.68	0.0	25.70
		1	3	24.36	24.53	24.61	0.0	25.70
		1	5	24.33	24.63	24.70	0.0	25.70
		3	0	24.32	24.54	24.64	0.0	25.70
		3	1	24.41	24.57	24.66	0.0	25.70
		3	3	24.40	24.62	24.69	0.0	25.70
		6	0	23.48	24.68	24.67	1.0	24.70
	16QAM	1	0	23.34	23.63	23.62	1.0	24.70
		1	3	23.44	23.66	23.62	1.0	24.70
		1	5	23.32	23.75	23.71	1.0	24.70
		3	0	23.60	23.91	23.99	1.0	24.70
		3	1	23.65	23.96	24.06	1.0	24.70
		3	3	23.65	23.98	24.07	1.0	24.70
		6	0	22.70	22.66	22.49	2.0	23.70
	64QAM	1	0	23.67	23.67	23.16	2.0	23.70
		1	3	23.03	22.69	22.68	2.0	23.70
		1	5	23.08	22.67	22.73	2.0	23.70
		3	0	23.01	22.68	22.71	2.0	23.70
		3	1	22.98	22.67	22.67	2.0	23.70
		3	3	22.96	22.71	22.75	2.0	23.70
		6	0	21.53	21.59	21.57	3.0	22.70
	256QAM	1	0	19.55	19.76	19.76	5.0	20.70
		1	3	19.58	19.80	19.83	5.0	20.70
		1	5	19.76	19.86	19.87	5.0	20.70
		3	0	19.70	19.81	19.84	5.0	20.70
		3	1	19.72	19.77	19.79	5.0	20.70
		3	3	19.76	19.84	19.81	5.0	20.70
		6	0	19.71	19.61	19.64	5.0	20.70

LTE Band 26 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)				MPR	Tune-up Limit
				26765	26790	26865	26965		
				821.5 MHz	824 MHz	831.5 MHz	841.5 MHz		
15 MHz	QPSK	1	0		24.15	24.12		0.0	25.00
		1	37		24.16	24.22		0.0	25.00
		1	74		24.25	24.28		0.0	25.00
		36	0		23.15	23.27		1.0	24.00
		36	20		23.25	23.32		1.0	24.00
		36	39		23.31	23.40		1.0	24.00
		75	0		23.21	23.33		1.0	24.00
	16QAM	1	0		23.54	23.18		1.0	24.00
		1	37		23.47	23.30		1.0	24.00
		1	74		23.61	23.30		1.0	24.00
		36	0		22.14	22.30		2.0	23.00
		36	20		22.23	22.32		2.0	23.00
		36	39		22.29	22.42		2.0	23.00
		75	0		22.24	22.35		2.0	23.00
	64QAM	1	0		22.41	22.55		2.0	23.00
		1	37		22.53	22.52		2.0	23.00
		1	74		22.61	22.56		2.0	23.00
		36	0		21.17	21.41		3.0	22.00
		36	20		21.29	21.43		3.0	22.00
		36	39		21.39	21.52		3.0	22.00
		75	0		21.28	21.42		3.0	22.00
	256QAM	1	0		19.56	19.10		5.0	20.00
		1	37		19.62	19.15		5.0	20.00
		1	74		19.81	19.34		5.0	20.00
		36	0		19.16	19.30		5.0	20.00
		36	20		19.31	19.34		5.0	20.00
		36	39		19.36	19.42		5.0	20.00
		75	0		19.32	19.35		5.0	20.00

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)				MPR	Tune-up Limit
				26740	26790	26865	26990		
				819 MHz	824 MHz	831.5 MHz	844 MHz		
10 MHz	QPSK	1	0	24.20	24.18	24.24	24.57	0.0	25.00
		1	25	24.19	24.21	24.45	24.50	0.0	25.00
		1	49	24.14	24.29	24.47	24.44	0.0	25.00
		25	0	23.37	23.34	23.50	23.54	1.0	24.00
		25	12	23.32	23.41	23.46	23.50	1.0	24.00
		25	25	23.32	23.41	23.53	23.57	1.0	24.00
		50	0	23.35	23.38	23.48	23.53	1.0	24.00
	16QAM	1	0	23.31	23.30	23.35	23.96	1.0	24.00
		1	25	23.24	23.21	23.45	23.84	1.0	24.00
		1	49	23.19	23.22	23.39	23.84	1.0	24.00
		25	0	22.45	22.47	22.52	22.57	2.0	23.00
		25	12	22.42	22.48	22.56	22.59	2.0	23.00
		25	25	22.39	22.47	22.60	22.64	2.0	23.00
		50	0	22.37	22.48	22.49	22.56	2.0	23.00
	64QAM	1	0	22.64	22.61	22.55	22.76	2.0	23.00
		1	25	22.55	22.74	22.67	22.87	2.0	23.00
		1	49	22.51	22.70	22.73	22.67	2.0	23.00
		25	0	21.45	21.40	21.60	21.65	3.0	22.00
		25	12	21.44	21.44	21.57	21.64	3.0	22.00
		25	25	21.39	21.48	21.64	21.67	3.0	22.00
		50	0	21.37	21.48	21.56	21.58	3.0	22.00
	256QAM	1	0	19.46	19.75	19.21	19.40	5.0	20.00
		1	25	19.33	19.80	19.29	19.32	5.0	20.00
		1	49	19.35	19.90	19.33	19.32	5.0	20.00
		25	0	19.48	19.37	19.52	19.59	5.0	20.00
		25	12	19.46	19.48	19.54	19.59	5.0	20.00
		25	25	19.43	19.45	19.58	19.62	5.0	20.00
		50	0	19.41	19.49	19.49	19.53	5.0	20.00

LTE Band 26 Measured Results (Continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)				MPR	Tune-up Limit
				26715	26790	26865	27015		
				816.5 MHz	824 MHz	831.5 MHz	846.5 MHz		
5 MHz	QPSK	1	0	24.32	24.25	24.47	24.64	0.0	25.00
		1	12	24.27	24.29	24.43	24.52	0.0	25.00
		1	24	24.25	24.30	24.50	24.46	0.0	25.00
		12	0	23.40	23.30	23.43	23.55	1.0	24.00
		12	7	23.41	23.40	23.44	23.59	1.0	24.00
		12	13	23.35	23.38	23.49	23.49	1.0	24.00
		25	0	23.35	23.42	23.45	23.51	1.0	24.00
	16QAM	1	0	23.40	23.39	23.63	24.00	1.0	24.00
		1	12	23.31	23.25	23.61	23.94	1.0	24.00
		1	24	23.41	23.32	23.66	23.96	1.0	24.00
		12	0	22.46	22.38	22.52	22.71	2.0	23.00
		12	7	22.39	22.40	22.56	22.73	2.0	23.00
		12	13	22.39	22.41	22.57	22.67	2.0	23.00
		25	0	22.32	22.33	22.48	22.59	2.0	23.00
	64QAM	1	0	22.59	22.19	22.78	22.93	2.0	23.00
		1	12	22.53	22.33	22.87	22.89	2.0	23.00
		1	24	22.52	22.38	22.89	22.86	2.0	23.00
		12	0	21.45	21.36	21.46	21.58	3.0	22.00
		12	7	21.42	21.49	21.48	21.62	3.0	22.00
		12	13	21.38	21.46	21.45	21.53	3.0	22.00
		25	0	21.35	21.38	21.39	21.48	3.0	22.00
	256QAM	1	0	19.45	19.11	19.59	19.78	5.0	20.00
		1	12	19.48	19.18	19.60	19.64	5.0	20.00
		1	24	19.37	19.13	19.68	19.65	5.0	20.00
		12	0	19.39	19.30	19.48	19.59	5.0	20.00
		12	7	19.40	19.46	19.50	19.62	5.0	20.00
		12	13	19.32	19.45	19.56	19.57	5.0	20.00
		25	0	19.38	19.47	19.46	19.55	5.0	20.00

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)				MPR	Tune-up Limit
				26705	26790	26865	27025		
				815.5 MHz	824 MHz	831.5 MHz	847.5 MHz		
3 MHz	QPSK	1	0	24.27	24.26	24.45	24.51	0.0	25.00
		1	8	24.17	24.18	24.35	24.41	0.0	25.00
		1	14	24.22	24.30	24.49	24.46	0.0	25.00
		8	0	23.35	23.29	23.41	23.50	1.0	24.00
		8	4	23.39	23.43	23.44	23.50	1.0	24.00
		8	7	23.38	23.38	23.55	23.53	1.0	24.00
		15	0	23.34	23.33	23.44	23.47	1.0	24.00
	16QAM	1	0	23.37	23.33	23.43	23.86	1.0	24.00
		1	8	23.30	23.27	23.32	23.74	1.0	24.00
		1	14	23.32	23.29	23.42	23.84	1.0	24.00
		8	0	22.39	22.35	22.53	22.54	2.0	23.00
		8	4	22.41	22.41	22.53	22.58	2.0	23.00
		8	7	22.42	22.46	22.63	22.60	2.0	23.00
		15	0	22.34	22.32	22.49	22.57	2.0	23.00
	64QAM	1	0	22.67	22.70	22.54	22.60	2.0	23.00
		1	8	22.52	22.81	22.58	22.53	2.0	23.00
		1	14	22.64	22.68	22.59	22.57	2.0	23.00
		8	0	21.32	21.32	21.45	21.52	3.0	22.00
		8	4	21.30	21.48	21.48	21.56	3.0	22.00
		8	7	21.30	21.49	21.55	21.55	3.0	22.00
		15	0	21.41	21.37	21.45	21.56	3.0	22.00
	256QAM	1	0	19.36	19.61	19.26	19.40	5.0	20.00
		1	8	19.42	19.59	19.32	19.30	5.0	20.00
		1	14	19.32	19.72	19.29	19.27	5.0	20.00
		8	0	19.47	19.39	19.37	19.42	5.0	20.00
		8	4	19.49	19.47	19.46	19.55	5.0	20.00
		8	7	19.53	19.46	19.51	19.50	5.0	20.00
		15	0	19.43	19.43	19.51	19.58	5.0	20.00

LTE Band 26 Measured Results (Continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)				MPR	Tune-up Limit
				26697	26790	26865	27033		
				814.7 MHz	824 MHz	831.5 MHz	848.3 MHz		
1.4 MHz	QPSK	1	0	24.17	24.13	24.41	24.31	0.0	25.00
		1	3	24.23	24.16	24.48	24.31	0.0	25.00
		1	5	24.20	24.10	24.45	24.27	0.0	25.00
		3	0	24.19	24.18	24.36	24.35	0.0	25.00
		3	1	24.22	24.25	24.40	24.39	0.0	25.00
		3	3	24.20	24.23	24.41	24.39	0.0	25.00
		6	0	23.32	23.27	23.32	23.39	1.0	24.00
	16QAM	1	0	23.18	23.65	23.55	23.84	1.0	24.00
		1	3	23.28	23.69	23.63	23.87	1.0	24.00
		1	5	23.22	23.68	23.56	23.80	1.0	24.00
		3	0	23.46	23.37	23.38	23.60	1.0	24.00
		3	1	23.56	23.29	23.38	23.65	1.0	24.00
		3	3	23.46	23.39	23.49	23.56	1.0	24.00
		6	0	22.48	22.19	22.50	22.28	2.0	23.00
	64QAM	1	0	22.42	22.29	22.81	22.54	2.0	23.00
		1	3	22.52	22.45	22.99	22.59	2.0	23.00
		1	5	22.46	22.36	22.91	22.49	2.0	23.00
		3	0	22.25	22.29	22.68	22.55	2.0	23.00
		3	1	22.26	22.41	22.66	22.63	2.0	23.00
		3	3	22.27	22.47	22.75	22.63	2.0	23.00
		6	0	21.40	21.55	21.36	21.74	3.0	22.00
	256QAM	1	0	19.40	19.04	19.49	18.58	5.0	20.00
		1	3	19.51	19.15	19.70	19.80	5.0	20.00
		1	5	19.50	19.14	19.57	19.97	5.0	20.00
		3	0	19.39	19.05	19.33	19.66	5.0	20.00
		3	1	19.37	19.10	19.40	19.69	5.0	20.00
		3	3	19.41	19.20	19.40	19.73	5.0	20.00
		6	0	19.41	19.36	19.35	19.58	5.0	20.00

Note(s):

1. For Orange box's output power results, There are measured for the test of Part.90.

LTE Band 66 (Main 2. Ant) Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)				
				Measured Pwr (dBm)			MPR	Tune-up Limit
				132072	132322	132572		
				1720 MHz	1745 MHz	1770 MHz		
20 MHz	QPSK	1	0	24.00	24.13	24.04	0.0	25.00
		1	49	24.03	24.10	23.94	0.0	25.00
		1	99	24.10	24.12	23.98	0.0	25.00
		50	0	23.14	23.33	23.14	1.0	24.00
		50	24	23.17	23.32	23.13	1.0	24.00
		50	50	23.21	23.31	23.15	1.0	24.00
		100	0	23.17	23.21	23.15	1.0	24.00
	16QAM	1	0	23.62	23.73	23.51	1.0	24.00
		1	49	23.62	23.70	23.38	1.0	24.00
		1	99	23.73	23.64	23.42	1.0	24.00
		50	0	22.19	22.25	22.16	2.0	23.00
		50	24	22.20	22.24	22.12	2.0	23.00
		50	50	22.23	22.18	22.11	2.0	23.00
		100	0	22.23	22.20	22.15	2.0	23.00
	64QAM	1	0	22.15	22.72	22.52	2.0	23.00
		1	49	22.20	22.90	22.40	2.0	23.00
		1	99	22.37	22.77	22.36	2.0	23.00
		50	0	21.22	21.22	21.22	3.0	22.00
		50	24	21.26	21.21	21.19	3.0	22.00
		50	50	21.28	21.19	21.16	3.0	22.00
		100	0	21.26	21.18	21.15	3.0	22.00
	256QAM	1	0	19.06	19.36	19.31	4.0	21.00
		1	49	19.12	19.36	19.24	4.0	21.00
		1	99	19.19	19.30	19.19	4.0	21.00
		50	0	19.20	19.19	19.14	4.0	21.00
		50	24	19.23	19.19	19.11	4.0	21.00
		50	50	19.24	19.17	19.11	4.0	21.00
		100	0	19.21	19.16	19.09	4.0	21.00
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				132047	132322	132597		
				1717.5 MHz	1745 MHz	1772.5 MHz		
15 MHz	QPSK	1	0	24.23	24.32	24.32	0.0	25.00
		1	37	23.88	24.31	24.21	0.0	25.00
		1	74	24.19	24.24	24.13	0.0	25.00
		36	0	23.08	23.42	23.35	1.0	24.00
		36	20	23.08	23.42	23.37	1.0	24.00
		36	39	23.20	23.37	23.35	1.0	24.00
		75	0	23.12	23.40	23.35	1.0	24.00
	16QAM	1	0	23.37	23.39	23.69	1.0	24.00
		1	37	23.25	23.40	23.68	1.0	24.00
		1	74	23.64	23.30	23.59	1.0	24.00
		36	0	22.22	22.43	22.41	2.0	23.00
		36	20	22.27	22.42	22.40	2.0	23.00
		36	39	22.41	22.40	22.44	2.0	23.00
		75	0	22.39	22.42	22.36	2.0	23.00
	64QAM	1	0	22.34	22.95	22.67	2.0	23.00
		1	37	22.02	22.75	22.60	2.0	23.00
		1	74	22.39	22.91	22.56	2.0	23.00
		36	0	21.15	21.42	21.40	3.0	22.00
		36	20	21.17	21.42	21.37	3.0	22.00
		36	39	21.28	21.39	21.35	3.0	22.00
		75	0	21.20	21.43	21.34	3.0	22.00
	256QAM	1	0	19.13	19.64	19.74	4.0	21.00
		1	37	19.22	19.66	19.66	4.0	21.00
		1	74	19.26	19.59	19.60	4.0	21.00
		36	0	19.30	19.38	19.34	4.0	21.00
		36	20	19.39	19.37	19.37	4.0	21.00
		36	39	19.40	19.35	19.32	4.0	21.00
		75	0	19.38	19.36	19.33	4.0	21.00

LTE Band 66 (Main 2. Ant) Measured Results (Continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pw r (dBm)			MPR	Tune-up Limit
				132022	132322	132622		
				1715 MHz	1745 MHz	1775 MHz		
10 MHz	QPSK	1	0	24.18	24.50	24.34	0.0	25.00
		1	25	23.85	24.52	24.22	0.0	25.00
		1	49	24.14	24.43	24.30	0.0	25.00
		25	0	23.14	23.55	23.45	1.0	24.00
		25	12	23.12	23.54	23.46	1.0	24.00
		25	25	23.24	23.62	23.47	1.0	24.00
		50	0	23.18	23.56	23.48	1.0	24.00
	16QAM	1	0	23.18	23.48	23.76	1.0	24.00
		1	25	22.94	23.44	23.68	1.0	24.00
		1	49	23.30	23.36	23.66	1.0	24.00
		25	0	22.39	22.60	22.53	2.0	23.00
		25	12	22.40	22.62	22.55	2.0	23.00
		25	25	22.54	22.61	22.54	2.0	23.00
		50	0	22.46	22.53	22.48	2.0	23.00
	64QAM	1	0	22.37	22.73	22.74	2.0	23.00
		1	25	22.01	22.81	22.73	2.0	23.00
		1	49	22.39	22.65	22.63	2.0	23.00
		25	0	21.20	21.63	21.47	3.0	22.00
		25	12	21.17	21.62	21.51	3.0	22.00
		25	25	21.31	21.66	21.48	3.0	22.00
		50	0	21.24	21.51	21.47	3.0	22.00
	256QAM	1	0	19.17	19.53	19.76	4.0	21.00
		1	25	19.22	19.57	19.92	4.0	21.00
		1	49	19.21	19.46	19.89	4.0	21.00
		25	0	19.45	19.61	19.55	4.0	21.00
		25	12	19.50	19.64	19.53	4.0	21.00
		25	25	19.48	19.67	19.51	4.0	21.00
		50	0	19.46	19.58	19.51	4.0	21.00

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pw r (dBm)			MPR	Tune-up Limit
				131997	132322	132647		
				1712.5 MHz	1745 MHz	1777.5 MHz		
5 MHz	QPSK	1	0	24.22	24.55	24.50	0.0	25.00
		1	12	23.81	24.47	24.24	0.0	25.00
		1	24	23.94	24.55	24.41	0.0	25.00
		12	0	23.01	23.59	23.45	1.0	24.00
		12	7	22.97	23.57	23.50	1.0	24.00
		12	13	22.96	23.55	23.47	1.0	24.00
		25	0	22.98	23.60	23.47	1.0	24.00
	16QAM	1	0	23.11	23.72	23.99	1.0	24.00
		1	12	22.88	23.60	23.84	1.0	24.00
		1	24	23.13	23.69	23.88	1.0	24.00
		12	0	22.20	22.68	22.61	2.0	23.00
		12	7	22.19	22.69	22.64	2.0	23.00
		12	13	22.23	22.65	22.60	2.0	23.00
		25	0	22.19	22.61	22.54	2.0	23.00
	64QAM	1	0	22.47	22.51	22.80	2.0	23.00
		1	12	22.06	22.53	22.74	2.0	23.00
		1	24	22.21	22.49	22.78	2.0	23.00
		12	0	21.04	21.63	21.43	3.0	22.00
		12	7	21.00	21.67	21.47	3.0	22.00
		12	13	20.98	21.61	21.45	3.0	22.00
		25	0	20.96	21.53	21.37	3.0	22.00
	256QAM	1	0	19.43	19.37	19.59	4.0	21.00
		1	12	19.50	19.44	19.51	4.0	21.00
		1	24	19.48	19.31	19.63	4.0	21.00
		12	0	19.45	19.62	19.43	4.0	21.00
		12	7	19.47	19.63	19.47	4.0	21.00
		12	13	19.41	19.59	19.49	4.0	21.00
		25	0	19.47	19.63	19.45	4.0	21.00

LTE Band 66 (Main 2. Ant) Measured Results (Continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				131987	132322	132657		
				1711.5 MHz	1745 MHz	1778.5 MHz		
3 MHz	QPSK	1	0	24.17	24.51	24.38	0.0	25.00
		1	8	23.81	24.33	24.28	0.0	25.00
		1	14	23.79	24.52	24.37	0.0	25.00
		8	0	23.01	23.55	23.42	1.0	24.00
		8	4	23.00	23.56	23.46	1.0	24.00
		8	7	22.98	23.58	23.47	1.0	24.00
		15	0	22.98	23.56	23.42	1.0	24.00
	16QAM	1	0	23.01	23.45	23.73	1.0	24.00
		1	8	22.87	23.36	23.60	1.0	24.00
		1	14	22.96	23.41	23.80	1.0	24.00
		8	0	22.19	22.65	22.44	2.0	23.00
		8	4	22.22	22.67	22.52	2.0	23.00
		8	7	22.24	22.69	22.54	2.0	23.00
		15	0	22.18	22.59	22.47	2.0	23.00
	64QAM	1	0	22.31	22.94	22.45	2.0	23.00
		1	8	21.98	22.68	22.46	2.0	23.00
		1	14	22.00	22.92	22.52	2.0	23.00
		8	0	20.84	21.60	21.47	3.0	22.00
		8	4	20.84	21.67	21.43	3.0	22.00
		8	7	20.84	21.67	21.44	3.0	22.00
		15	0	20.91	21.57	21.42	3.0	22.00
	256QAM	1	0	19.38	19.98	19.20	4.0	21.00
		1	8	19.44	19.99	19.19	4.0	21.00
		1	14	19.36	19.94	19.18	4.0	21.00
		8	0	19.50	19.67	19.32	4.0	21.00
		8	4	19.58	19.68	19.39	4.0	21.00
		8	7	19.59	19.69	19.39	4.0	21.00
		15	0	19.46	19.64	19.50	4.0	21.00

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				131979	132322	132665		
				1710.7 MHz	1745 MHz	1779.3 MHz		
1.4 MHz	QPSK	1	0	24.11	24.35	24.29	0.0	25.00
		1	3	24.13	24.41	24.37	0.0	25.00
		1	5	24.11	24.38	24.33	0.0	25.00
		3	0	24.19	24.35	24.26	0.0	25.00
		3	1	24.17	24.41	24.29	0.0	25.00
		3	3	24.08	24.38	24.27	0.0	25.00
		6	0	23.25	23.47	23.29	1.0	24.00
	16QAM	1	0	23.52	23.37	23.43	1.0	24.00
		1	3	23.47	23.43	23.57	1.0	24.00
		1	5	23.42	23.36	23.46	1.0	24.00
		3	0	23.21	23.63	23.25	1.0	24.00
		3	1	23.25	23.61	23.23	1.0	24.00
		3	3	23.23	23.66	23.31	1.0	24.00
		6	0	22.18	22.61	22.48	2.0	23.00
	64QAM	1	0	22.67	22.92	22.74	2.0	23.00
		1	3	22.68	22.99	22.79	2.0	23.00
		1	5	22.44	22.93	22.71	2.0	23.00
		3	0	22.25	22.77	22.60	2.0	23.00
		3	1	22.20	22.78	22.60	2.0	23.00
		3	3	22.13	22.76	22.59	2.0	23.00
		6	0	20.89	21.47	21.31	3.0	22.00
	256QAM	1	0	19.33	19.55	19.56	4.0	21.00
		1	3	19.50	19.75	19.62	4.0	21.00
		1	5	19.39	19.60	19.51	4.0	21.00
		3	0	19.32	19.66	19.27	4.0	21.00
		3	1	19.44	19.55	19.33	4.0	21.00
		3	3	19.44	19.57	19.25	4.0	21.00
		6	0	19.37	19.60	19.29	4.0	21.00

LTE Band 66 (Sub 1. Ant) Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)				
				Measured Pwr (dBm)			MPR	Tune-up Limit
				132072	132322	132572		
				1720 MHz	1745 MHz	1770 MHz		
20 MHz	QPSK	1	0	17.78	18.08	18.14	0.0	19.00
		1	49	17.84	17.98	17.89	0.0	19.00
		1	99	18.08	18.12	17.69	0.0	19.00
		50	0	17.02	17.19	17.21	1.0	18.00
		50	24	17.14	17.16	16.93	1.0	18.00
		50	50	17.19	17.14	16.93	1.0	18.00
		100	0	17.18	17.19	17.15	1.0	18.00
	16QAM	1	0	16.79	17.16	17.38	1.0	18.00
		1	49	16.86	17.00	17.28	1.0	18.00
		1	99	17.11	17.11	16.98	1.0	18.00
		50	0	15.96	16.16	16.15	2.0	17.00
		50	24	16.07	16.16	16.14	2.0	17.00
		50	50	16.12	16.13	15.91	2.0	17.00
		100	0	16.19	16.21	16.17	2.0	17.00
	64QAM	1	0	16.03	16.35	16.36	2.0	17.00
		1	49	16.09	16.27	16.22	2.0	17.00
		1	99	16.39	16.32	15.96	2.0	17.00
		50	0	15.09	15.26	15.29	3.0	16.00
		50	24	15.22	15.24	15.23	3.0	16.00
		50	50	15.22	15.24	15.01	3.0	16.00
		100	0	15.16	15.25	15.13	3.0	16.00
	256QAM	1	0	12.91	13.17	13.19	5.0	14.00
		1	49	12.94	13.14	13.05	5.0	14.00
		1	99	13.16	13.14	12.72	5.0	14.00
		50	0	13.07	13.16	13.15	5.0	14.00
		50	24	13.13	13.16	13.11	5.0	14.00
		50	50	13.16	13.16	12.93	5.0	14.00
		100	0	13.14	13.19	13.12	5.0	14.00
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				132047	132322	132597		
				1717.5 MHz	1745 MHz	1772.5 MHz		
15 MHz	QPSK	1	0	17.44	18.10	17.98	0.0	19.00
		1	37	17.59	18.03	17.79	0.0	19.00
		1	74	17.68	18.08	17.59	0.0	19.00
		36	0	16.69	17.19	17.13	1.0	18.00
		36	20	16.81	17.15	17.03	1.0	18.00
		36	39	16.84	17.22	16.83	1.0	18.00
		75	0	16.82	17.20	17.02	1.0	18.00
	16QAM	1	0	16.49	17.12	17.05	1.0	18.00
		1	37	16.70	17.05	16.87	1.0	18.00
		1	74	16.70	17.16	17.15	1.0	18.00
		36	0	15.63	16.22	16.14	2.0	17.00
		36	20	15.73	16.20	16.02	2.0	17.00
		36	39	15.76	16.22	15.88	2.0	17.00
		75	0	15.73	16.16	16.02	2.0	17.00
	64QAM	1	0	15.67	16.32	16.26	2.0	17.00
		1	37	15.82	16.27	16.05	2.0	17.00
		1	74	15.93	16.36	15.85	2.0	17.00
		36	0	14.73	15.33	15.23	3.0	16.00
		36	20	14.86	15.31	15.15	3.0	16.00
		36	39	14.89	15.31	14.98	3.0	16.00
		75	0	14.78	15.23	15.03	3.0	16.00
	256QAM	1	0	12.55	13.19	13.15	5.0	14.00
		1	37	12.66	13.15	12.94	5.0	14.00
		1	74	12.79	13.22	12.76	5.0	14.00
		36	0	12.59	13.15	13.02	5.0	14.00
		36	20	12.71	13.15	12.94	5.0	14.00
		36	39	12.71	13.12	12.81	5.0	14.00
		75	0	12.79	13.19	13.00	5.0	14.00

LTE Band 66 (Sub 1. Ant) Measured Results (Continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pw r (dBm)			MPR	Tune-up Limit
				132022	132322	132622		
				1715 MHz	1745 MHz	1775 MHz		
10 MHz	QPSK	1	0	17.61	17.81	17.85	0.0	19.00
		1	25	17.72	17.84	17.66	0.0	19.00
		1	49	17.82	17.85	17.46	0.0	19.00
		25	0	16.79	16.95	17.00	1.0	18.00
		25	12	16.90	16.96	16.90	1.0	18.00
		25	25	16.92	16.97	16.70	1.0	18.00
		50	0	16.88	16.95	16.89	1.0	18.00
	16QAM	1	0	16.68	16.89	16.92	1.0	18.00
		1	25	16.77	16.98	16.74	1.0	18.00
		1	49	17.05	16.90	17.02	1.0	18.00
		25	0	15.83	15.98	16.01	2.0	17.00
		25	12	15.92	16.01	15.89	2.0	17.00
		25	25	15.96	15.94	15.75	2.0	17.00
		50	0	15.90	15.89	15.89	2.0	17.00
	64QAM	1	0	15.94	16.08	16.13	2.0	17.00
		1	25	16.00	16.14	15.92	2.0	17.00
		1	49	16.07	16.08	15.72	2.0	17.00
		25	0	14.92	15.09	15.10	3.0	16.00
		25	12	14.95	15.07	15.02	3.0	16.00
		25	25	14.97	15.07	14.85	3.0	16.00
		50	0	14.96	15.04	14.90	3.0	16.00
	256QAM	1	0	12.79	12.97	13.02	5.0	14.00
		1	25	12.92	13.05	12.81	5.0	14.00
		1	49	12.85	13.01	12.63	5.0	14.00
		25	0	12.77	12.94	12.89	5.0	14.00
		25	12	12.89	12.96	12.81	5.0	14.00
		25	25	12.93	12.91	12.68	5.0	14.00
		50	0	12.88	12.97	12.87	5.0	14.00

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pw r (dBm)			MPR	Tune-up Limit
				131997	132322	132647		
				1712.5 MHz	1745 MHz	1777.5 MHz		
5 MHz	QPSK	1	0	17.43	18.03	17.88	0.0	19.00
		1	12	17.58	17.96	17.69	0.0	19.00
		1	24	17.67	18.01	17.49	0.0	19.00
		12	0	16.68	17.12	17.03	1.0	18.00
		12	7	16.80	17.08	16.93	1.0	18.00
		12	13	16.83	17.15	16.73	1.0	18.00
		25	0	16.81	17.13	16.92	1.0	18.00
	16QAM	1	0	16.48	17.05	16.95	1.0	18.00
		1	12	16.69	16.98	16.77	1.0	18.00
		1	24	16.69	17.09	17.05	1.0	18.00
		12	0	15.62	16.15	16.04	2.0	17.00
		12	7	15.72	16.13	15.92	2.0	17.00
		12	13	15.75	16.15	15.78	2.0	17.00
		25	0	15.72	16.09	15.92	2.0	17.00
	64QAM	1	0	15.66	16.25	16.16	2.0	17.00
		1	12	15.81	16.21	15.95	2.0	17.00
		1	24	15.92	16.30	15.80	2.0	17.00
		12	0	14.72	15.27	15.18	3.0	16.00
		12	7	14.85	15.25	15.10	3.0	16.00
		12	13	14.88	15.25	14.93	3.0	16.00
		25	0	14.77	15.17	14.98	3.0	16.00
	256QAM	1	0	12.54	13.13	13.10	5.0	14.00
		1	12	12.65	13.09	12.89	5.0	14.00
		1	24	12.78	13.16	12.71	5.0	14.00
		12	0	12.58	13.09	12.97	5.0	14.00
		12	7	12.70	13.09	12.89	5.0	14.00
		12	13	12.70	13.06	12.76	5.0	14.00
		25	0	12.78	13.13	12.95	5.0	14.00

LTE Band 66 (Sub 1. Ant) Measured Results (Continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				131987	132322	132657		
				1711.5 MHz	1745 MHz	1778.5 MHz		
3 MHz	QPSK	1	0	17.73	17.97	18.01	0.0	19.00
		1	8	17.79	17.87	17.76	0.0	19.00
		1	14	18.03	18.01	17.56	0.0	19.00
		8	0	16.97	17.08	17.08	1.0	18.00
		8	4	17.09	17.05	16.80	1.0	18.00
		8	7	17.14	17.03	16.80	1.0	18.00
		15	0	17.13	17.08	17.02	1.0	18.00
	16QAM	1	0	16.74	17.05	17.25	1.0	18.00
		1	8	16.81	16.89	17.15	1.0	18.00
		1	14	17.06	17.00	16.85	1.0	18.00
		8	0	15.91	16.05	16.02	2.0	17.00
		8	4	16.02	16.05	16.01	2.0	17.00
		8	7	16.07	16.02	15.78	2.0	17.00
		15	0	16.14	16.10	16.04	2.0	17.00
	64QAM	1	0	15.98	16.24	16.23	2.0	17.00
		1	8	16.04	16.16	16.09	2.0	17.00
		1	14	16.34	16.21	15.83	2.0	17.00
		8	0	15.04	15.15	15.16	3.0	16.00
		8	4	15.17	15.13	15.10	3.0	16.00
		8	7	15.17	15.13	14.88	3.0	16.00
		15	0	15.11	15.14	15.00	3.0	16.00
	256QAM	1	0	12.86	13.06	13.06	5.0	14.00
		1	8	12.89	13.03	12.92	5.0	14.00
		1	14	13.11	13.03	12.59	5.0	14.00
		8	0	13.02	13.05	13.02	5.0	14.00
		8	4	13.08	13.05	12.98	5.0	14.00
		8	7	13.11	13.05	12.80	5.0	14.00
		15	0	13.09	13.08	12.99	5.0	14.00

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				131979	132322	132665		
				1710.7 MHz	1745 MHz	1779.3 MHz		
1.4 MHz	QPSK	1	0	17.65	17.93	18.12	0.0	19.00
		1	3	17.71	17.83	17.87	0.0	19.00
		1	5	17.95	17.97	17.67	0.0	19.00
		3	0	16.89	17.04	17.19	0.0	19.00
		3	1	17.01	17.01	16.91	0.0	19.00
		3	3	17.06	16.99	16.91	0.0	19.00
		6	0	17.05	17.04	17.13	1.0	18.00
	16QAM	1	0	16.66	17.01	17.36	1.0	18.00
		1	3	16.73	16.99	17.26	1.0	18.00
		1	5	16.98	17.10	16.96	1.0	18.00
		3	0	15.83	16.15	16.13	1.0	18.00
		3	1	15.94	16.15	16.12	1.0	18.00
		3	3	15.99	16.12	15.89	1.0	18.00
		6	0	16.06	16.20	16.15	2.0	17.00
	64QAM	1	0	15.90	16.34	16.34	2.0	17.00
		1	3	15.96	16.26	16.20	2.0	17.00
		1	5	16.26	16.31	15.92	2.0	17.00
		3	0	14.96	15.25	15.25	2.0	17.00
		3	1	15.09	15.23	15.19	2.0	17.00
		3	3	15.09	15.23	14.97	2.0	17.00
		6	0	15.03	15.24	15.09	3.0	16.00
	256QAM	1	0	12.81	13.16	13.15	5.0	14.00
		1	3	12.84	13.13	13.01	5.0	14.00
		1	5	13.06	13.13	12.68	5.0	14.00
		3	0	12.97	13.15	13.11	5.0	14.00
		3	1	13.03	13.15	13.07	5.0	14.00
		3	3	13.06	13.15	12.89	5.0	14.00
		6	0	13.04	13.18	13.08	5.0	14.00

LTE Band 41 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)						
				Measured Pwr (dBm)					MPR	Tune-up Limit
				39750	40185	40620	41055	41490		
				2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		
20 MHz	QPSK	1	0	23.79	23.44	23.49	23.46	23.63	0.0	24.00
		1	49	23.70	23.45	23.42	23.31	23.57	0.0	24.00
		1	99	23.65	23.46	23.59	23.43	23.67	0.0	24.00
		50	0	22.87	22.51	22.52	22.42	22.72	1.0	23.00
		50	24	22.85	22.61	22.58	22.45	22.71	1.0	23.00
		50	50	22.71	22.61	22.57	22.49	22.78	1.0	23.00
		100	0	22.44	22.55	22.59	22.80	22.71	1.0	23.00
	16QAM	1	0	22.85	22.46	22.39	22.56	22.73	1.0	23.00
		1	49	22.85	22.45	22.35	22.46	22.63	1.0	23.00
		1	99	22.77	22.49	22.48	22.58	22.74	1.0	23.00
		50	0	21.88	21.51	21.51	21.50	21.70	2.0	22.00
		50	24	21.90	21.60	21.59	21.51	21.69	2.0	22.00
		50	50	21.77	21.58	21.59	21.55	21.77	2.0	22.00
		100	0	21.75	21.54	21.57	21.48	21.68	2.0	22.00
	64QAM	1	0	21.34	21.50	21.79	21.01	21.69	2.0	22.00
		1	49	21.30	21.51	21.81	20.92	21.58	2.0	22.00
		1	99	21.17	21.60	21.96	21.11	21.78	2.0	22.00
		50	0	20.88	20.58	20.56	20.45	20.74	3.0	21.00
		50	24	20.86	20.65	20.63	20.46	20.75	3.0	21.00
		50	50	20.76	20.69	20.59	20.53	20.78	3.0	21.00
		100	0	20.80	20.55	20.63	20.51	20.70	3.0	21.00
	256QAM	1	0	18.96	18.63	18.85	18.52	18.71	5.0	19.00
		1	49	18.76	18.59	18.88	18.41	18.68	5.0	19.00
		1	99	18.75	18.67	18.91	18.51	18.81	5.0	19.00
		50	0	18.90	18.58	18.55	18.44	18.76	5.0	19.00
		50	24	18.87	18.66	18.64	18.45	18.74	5.0	19.00
		50	50	18.75	18.62	18.64	18.51	18.82	5.0	19.00
		100	0	18.81	18.57	18.64	18.45	18.75	5.0	19.00
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)					MPR	Tune-up Limit
				39750	40185	40620	41055	41490		
				2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		
15 MHz	QPSK	1	0	23.67	23.44	23.45	23.36	23.51	0.0	24.00
		1	37	23.60	23.36	23.38	23.22	23.51	0.0	24.00
		1	74	23.55	23.44	23.51	23.30	23.61	0.0	24.00
		36	0	22.78	22.58	22.46	22.40	22.61	1.0	23.00
		36	20	22.80	22.53	22.54	22.39	22.62	1.0	23.00
		36	39	22.68	22.55	22.52	22.46	22.70	1.0	23.00
		75	0	22.76	22.56	22.52	22.39	22.64	1.0	23.00
	16QAM	1	0	22.70	22.46	22.49	22.44	22.53	1.0	23.00
		1	37	22.62	22.35	22.46	22.33	22.49	1.0	23.00
		1	74	22.59	22.45	22.53	22.39	22.58	1.0	23.00
		36	0	21.81	21.58	21.46	21.43	21.64	2.0	22.00
		36	20	21.79	21.51	21.53	21.42	21.61	2.0	22.00
		36	39	21.69	21.54	21.48	21.48	21.72	2.0	22.00
		75	0	21.80	21.58	21.54	21.42	21.65	2.0	22.00
	64QAM	1	0	21.88	21.49	21.78	21.67	21.73	2.0	22.00
		1	37	21.83	21.37	21.76	21.59	21.70	2.0	22.00
		1	74	21.74	21.41	21.87	21.71	21.83	2.0	22.00
		36	0	20.87	20.68	20.53	20.67	21.00	3.0	21.00
		36	20	20.85	20.64	20.59	20.65	21.00	3.0	21.00
		36	39	20.76	20.63	20.60	20.74	20.98	3.0	21.00
		75	0	20.89	20.61	20.61	20.68	20.94	3.0	21.00
	256QAM	1	0	18.98	18.73	18.29	18.70	18.97	5.0	19.00
		1	37	18.88	18.61	18.26	18.65	18.88	5.0	19.00
		1	74	18.85	18.67	18.35	18.76	18.94	5.0	19.00
		36	0	18.86	18.66	18.58	18.63	18.97	5.0	19.00
		36	20	18.86	18.62	18.62	18.60	18.95	5.0	19.00
		36	39	18.76	18.62	18.61	18.63	18.79	5.0	19.00
		75	0	18.90	18.67	18.58	18.61	18.95	5.0	19.00

LTE Band 41 Measured Results (Continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)					MPR	Tune-up Limit
				39750	40185	40620	41055	41490		
				2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		
10 MHz	QPSK	1	0	23.71	23.50	23.46	23.28	23.53	0.0	24.00
		1	25	23.74	23.44	23.49	23.35	23.54	0.0	24.00
		1	49	23.60	23.47	23.42	23.23	23.59	0.0	24.00
		25	0	22.81	22.57	22.49	22.39	22.57	1.0	23.00
		25	12	22.83	22.58	22.57	22.39	22.63	1.0	23.00
		25	25	22.72	22.58	22.61	22.47	22.70	1.0	23.00
		50	0	22.79	22.58	22.56	22.39	22.63	1.0	23.00
	16QAM	1	0	22.87	22.60	22.47	22.47	22.67	1.0	23.00
		1	25	22.80	22.53	22.43	22.47	22.64	1.0	23.00
		1	49	22.82	22.54	22.44	22.50	22.72	1.0	23.00
		25	0	21.81	21.56	21.52	21.39	21.59	2.0	22.00
		25	12	21.82	21.56	21.68	21.43	21.58	2.0	22.00
		25	25	21.69	21.55	21.62	21.48	21.70	2.0	22.00
		50	0	21.84	21.56	21.60	21.44	21.67	2.0	22.00
	64QAM	1	0	21.84	21.85	21.46	21.45	21.93	2.0	22.00
		1	25	21.74	21.80	21.55	21.51	21.95	2.0	22.00
		1	49	21.62	21.75	21.50	21.58	21.95	2.0	22.00
		25	0	20.91	20.59	20.56	20.65	20.73	3.0	21.00
		25	12	20.88	20.64	20.65	20.64	20.76	3.0	21.00
		25	25	20.75	20.60	20.64	20.74	20.82	3.0	21.00
		50	0	20.90	20.65	20.62	20.66	20.78	3.0	21.00
	256QAM	1	0	18.50	18.28	18.57	18.80	18.46	5.0	19.00
		1	25	18.98	18.29	18.57	18.72	18.49	5.0	19.00
		1	49	18.97	18.22	18.53	18.81	18.57	5.0	19.00
		25	0	18.85	18.63	18.52	18.63	18.78	5.0	19.00
		25	12	18.83	18.69	18.63	18.62	18.84	5.0	19.00
		25	25	18.78	18.66	18.60	18.70	18.86	5.0	19.00
		50	0	18.91	18.63	18.60	18.63	18.78	5.0	19.00

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)					MPR	Tune-up Limit
				39750	40185	40620	41055	41490		
				2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		
5 MHz	QPSK	1	0	23.63	23.34	23.44	23.26	23.46	0.0	24.00
		1	12	23.62	23.40	23.41	23.25	23.39	0.0	24.00
		1	24	23.60	23.43	23.52	23.34	23.54	0.0	24.00
		12	0	22.75	22.53	22.56	22.36	22.60	1.0	23.00
		12	7	22.80	22.55	22.63	22.40	22.62	1.0	23.00
		12	13	22.68	22.54	22.55	22.37	22.66	1.0	23.00
		25	0	22.74	22.53	22.52	22.34	22.59	1.0	23.00
	16QAM	1	0	22.80	22.37	22.35	22.43	22.47	1.0	23.00
		1	12	22.70	22.45	22.42	22.36	22.41	1.0	23.00
		1	24	22.84	22.43	22.46	22.53	22.54	1.0	23.00
		12	0	21.80	21.54	21.54	21.34	21.61	2.0	22.00
		12	7	21.82	21.58	21.61	21.41	21.62	2.0	22.00
		12	13	21.71	21.54	21.53	21.39	21.68	2.0	22.00
		25	0	21.77	21.53	21.57	21.37	21.61	2.0	22.00
	64QAM	1	0	21.34	21.52	21.88	21.47	22.00	2.0	22.00
		1	12	21.51	21.67	21.95	21.56	21.89	2.0	22.00
		1	24	21.44	21.63	21.96	21.58	21.88	2.0	22.00
		12	0	20.63	20.56	20.65	20.66	20.92	3.0	21.00
		12	7	20.66	20.61	20.66	20.72	20.94	3.0	21.00
		12	13	20.59	20.57	20.63	20.66	20.98	3.0	21.00
		25	0	20.60	20.57	20.53	20.62	20.93	3.0	21.00
	256QAM	1	0	18.72	18.61	18.56	18.85	18.98	5.0	19.00
		1	12	18.90	18.58	18.77	18.91	18.96	5.0	19.00
		1	24	18.86	18.64	18.71	18.95	18.95	5.0	19.00
		12	0	18.58	18.54	18.58	18.59	18.89	5.0	19.00
		12	7	18.59	18.60	18.59	18.60	18.95	5.0	19.00
		12	13	18.56	18.54	18.59	18.56	18.98	5.0	19.00
		25	0	18.56	18.55	18.53	18.59	18.93	5.0	19.00

2. Reduced power

LTE Band 2 (Main 2. Ant) Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Reduced Average Power (dBm) Hotspot back-off					Reduced Average Power (dBm) Proximity sensor back-off				
				Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				18700	18900	19100			18700	18900	19100		
				1860 MHz	1880 MHz	1900 MHz			1860 MHz	1880 MHz	1900 MHz		
20 MHz	QPSK	1	0	21.07	20.85	21.13	0.0	22.00	21.06	21.06	21.14	0.0	22.00
		1	49	21.05	21.00	21.02	0.0	22.00	21.06	21.03	21.02	0.0	22.00
		1	99	20.81	21.11	21.10	0.0	22.00	21.10	21.12	21.11	0.0	22.00
		50	0	21.20	21.14	21.19	0.0	22.00	21.22	21.15	21.18	0.0	22.00
		50	24	21.21	21.13	21.23	0.0	22.00	21.24	21.13	21.36	0.0	22.00
		50	50	21.21	21.22	21.19	0.0	22.00	21.21	21.30	21.21	0.0	22.00
		100	0	21.22	21.14	21.20	0.0	22.00	21.23	21.15	21.22	0.0	22.00
	16QAM	1	0	21.52	21.63	21.67	0.0	22.00	21.61	21.67	21.51	0.0	22.00
		1	49	21.49	21.64	21.51	0.0	22.00	21.58	21.65	21.46	0.0	22.00
		1	99	21.55	21.66	21.63	0.0	22.00	21.63	21.70	21.52	0.0	22.00
		50	0	21.21	21.19	21.21	0.0	22.00	21.26	21.21	21.21	0.0	22.00
		50	24	21.21	21.19	21.23	0.0	22.00	21.30	21.20	21.21	0.0	22.00
		50	50	21.21	21.23	21.24	0.0	22.00	21.29	21.26	21.19	0.0	22.00
		100	0	21.24	21.18	21.23	0.0	22.00	21.29	21.19	21.23	0.0	22.00
	64QAM	1	0	21.68	21.50	21.27	0.0	22.00	21.25	21.75	21.82	0.0	22.00
		1	49	21.71	21.45	21.23	0.0	22.00	21.26	21.79	21.79	0.0	22.00
		1	99	21.65	21.44	21.31	0.0	22.00	21.32	21.70	21.83	0.0	22.00
		50	0	21.19	21.18	21.23	0.0	22.00	21.25	21.20	21.24	0.0	22.00
		50	24	21.21	21.18	21.21	0.0	22.00	21.25	21.16	21.24	0.0	22.00
		50	50	21.21	21.23	21.23	0.0	22.00	21.25	21.19	21.20	0.0	22.00
		100	0	21.19	21.15	21.27	0.0	22.00	21.24	21.13	21.22	0.0	22.00
	256QAM	1	0	19.35	19.33	19.19	2.0	20.00	19.18	19.35	19.35	2.0	20.00
		1	49	19.33	19.34	19.08	2.0	20.00	19.15	19.33	19.31	2.0	20.00
		1	99	19.37	19.37	19.18	2.0	20.00	19.19	19.37	19.42	2.0	20.00
		50	0	19.23	19.21	19.28	2.0	20.00	19.27	19.20	19.26	2.0	20.00
		50	24	19.25	19.18	19.27	2.0	20.00	19.29	19.18	19.26	2.0	20.00
		50	50	19.25	19.26	19.24	2.0	20.00	19.27	19.23	19.26	2.0	20.00
		100	0	19.22	19.17	19.25	2.0	20.00	19.28	19.15	19.25	2.0	20.00
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				18675	18900	19125			18675	18900	19125		
				1857.5 MHz	1880 MHz	1902.5 MHz			1857.5 MHz	1880 MHz	1902.5 MHz		
15 MHz	QPSK	1	0	21.13	21.09	20.96	0.0	22.00	21.18	21.12	21.02	0.0	22.00
		1	37	21.01	21.06	20.95	0.0	22.00	21.13	21.11	20.98	0.0	22.00
		1	74	21.14	21.07	21.00	0.0	22.00	21.19	21.12	21.06	0.0	22.00
		36	0	21.16	21.06	21.03	0.0	22.00	21.21	21.12	21.07	0.0	22.00
		36	20	21.17	21.07	21.02	0.0	22.00	21.22	21.12	21.09	0.0	22.00
		36	39	21.16	21.13	21.09	0.0	22.00	21.22	21.20	21.14	0.0	22.00
		75	0	21.14	21.06	21.01	0.0	22.00	21.19	21.11	21.06	0.0	22.00
	16QAM	1	0	21.53	21.46	20.98	0.0	22.00	21.57	21.60	21.03	0.0	22.00
		1	37	21.54	21.52	20.98	0.0	22.00	21.60	21.58	21.02	0.0	22.00
		1	74	21.55	21.55	21.04	0.0	22.00	21.59	21.58	21.07	0.0	22.00
		36	0	21.24	21.12	21.07	0.0	22.00	21.31	21.15	21.11	0.0	22.00
		36	20	21.25	21.10	21.07	0.0	22.00	21.29	21.10	21.09	0.0	22.00
		36	39	21.27	21.16	21.12	0.0	22.00	21.34	21.17	21.17	0.0	22.00
		75	0	21.22	21.09	21.05	0.0	22.00	21.25	21.12	21.09	0.0	22.00
	64QAM	1	0	21.40	21.72	21.42	0.0	22.00	21.18	21.10	21.08	0.0	22.00
		1	37	21.36	21.70	21.44	0.0	22.00	21.11	21.11	21.08	0.0	22.00
		1	74	21.42	21.71	21.51	0.0	22.00	21.17	21.12	21.14	0.0	22.00
		36	0	21.38	21.18	21.19	0.0	22.00	21.30	21.26	21.22	0.0	22.00
		36	20	21.34	21.17	21.19	0.0	22.00	21.30	21.21	21.24	0.0	22.00
		36	39	21.36	21.23	21.25	0.0	22.00	21.31	21.28	21.28	0.0	22.00
		75	0	21.29	21.19	21.16	0.0	22.00	21.22	21.14	21.13	0.0	22.00
	256QAM	1	0	19.43	19.75	19.88	2.0	20.00	19.37	19.28	19.28	2.0	20.00
		1	37	19.37	19.71	19.87	2.0	20.00	19.28	19.31	19.27	2.0	20.00
		1	74	19.46	19.77	19.99	2.0	20.00	19.28	19.32	19.37	2.0	20.00
		36	0	19.58	19.43	19.50	2.0	20.00	19.53	19.46	19.44	2.0	20.00
		36	20	19.56	19.44	19.48	2.0	20.00	19.49	19.44	19.41	2.0	20.00
		36	39	19.58	19.51	19.56	2.0	20.00	19.52	19.50	19.49	2.0	20.00
		75	0	19.56	19.43	19.48	2.0	20.00	19.50	19.42	19.41	2.0	20.00

LTE Band 2 (Main 2. Ant) Measured Results_(Continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				18650	18900	19150			18650	18900	19150		
				1855 MHz	1880 MHz	1905 MHz			1855 MHz	1880 MHz	1905 MHz		
10 MHz	QPSK	1	0	21.26	21.18	21.12	0.0	22.00	21.28	21.23	21.15	0.0	22.00
		1	25	21.23	21.08	21.11	0.0	22.00	21.28	21.17	21.15	0.0	22.00
		1	49	21.19	21.02	21.13	0.0	22.00	21.23	21.11	21.18	0.0	22.00
		25	0	21.28	21.20	21.13	0.0	22.00	21.35	21.25	21.18	0.0	22.00
		25	12	21.27	21.15	21.23	0.0	22.00	21.35	21.23	21.28	0.0	22.00
		25	25	21.25	21.20	21.19	0.0	22.00	21.30	21.29	21.25	0.0	22.00
		50	0	21.27	21.15	21.13	0.0	22.00	21.33	21.21	21.19	0.0	22.00
	16QAM	1	0	21.68	21.21	21.09	0.0	22.00	21.73	21.29	21.13	0.0	22.00
		1	25	21.65	21.23	21.11	0.0	22.00	21.69	21.27	21.17	0.0	22.00
		1	49	21.65	21.14	21.07	0.0	22.00	21.68	21.23	21.11	0.0	22.00
		25	0	21.35	21.31	21.17	0.0	22.00	21.39	21.37	21.21	0.0	22.00
		25	12	21.39	21.27	21.26	0.0	22.00	21.43	21.36	21.34	0.0	22.00
		25	25	21.30	21.33	21.26	0.0	22.00	21.35	21.36	21.31	0.0	22.00
		50	0	21.32	21.21	21.15	0.0	22.00	21.36	21.27	21.19	0.0	22.00
	64QAM	1	0	21.50	21.53	21.60	0.0	22.00	21.33	21.24	21.21	0.0	22.00
		1	25	21.47	21.60	21.65	0.0	22.00	21.21	21.23	21.27	0.0	22.00
		1	49	21.53	21.48	21.63	0.0	22.00	21.23	21.28	21.20	0.0	22.00
		25	0	21.48	21.43	21.33	0.0	22.00	21.43	21.38	21.34	0.0	22.00
		25	12	21.48	21.41	21.42	0.0	22.00	21.40	21.35	21.39	0.0	22.00
		25	25	21.44	21.40	21.39	0.0	22.00	21.38	21.39	21.38	0.0	22.00
		50	0	21.45	21.29	21.27	0.0	22.00	21.35	21.29	21.25	0.0	22.00
	256QAM	1	0	19.59	19.59	20.09	2.0	20.00	19.44	19.39	19.37	2.0	20.00
		1	25	19.48	19.60	20.12	2.0	20.00	19.41	19.42	19.40	2.0	20.00
		1	49	19.45	19.58	20.16	2.0	20.00	19.34	19.39	19.38	2.0	20.00
		25	0	19.71	19.67	19.64	2.0	20.00	19.66	19.60	19.56	2.0	20.00
		25	12	19.75	19.66	19.70	2.0	20.00	19.70	19.59	19.66	2.0	20.00
		25	25	19.68	19.69	19.65	2.0	20.00	19.63	19.63	19.60	2.0	20.00
		50	0	19.68	19.59	19.62	2.0	20.00	19.61	19.56	19.48	2.0	20.00

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				18625	18900	19175			18625	18900	19175		
				1852.5 MHz	1880 MHz	1907.5 MHz			1852.5 MHz	1880 MHz	1907.5 MHz		
5 MHz	QPSK	1	0	21.16	21.20	21.22	0.0	22.00	21.23	21.25	21.28	0.0	22.00
		1	12	21.10	21.20	21.16	0.0	22.00	21.16	21.24	21.20	0.0	22.00
		1	24	21.13	21.15	21.17	0.0	22.00	21.18	21.20	21.24	0.0	22.00
		12	0	21.29	21.22	21.23	0.0	22.00	21.32	21.28	21.24	0.0	22.00
		12	7	21.28	21.30	21.20	0.0	22.00	21.35	21.37	21.24	0.0	22.00
		12	13	21.20	21.21	21.13	0.0	22.00	21.24	21.26	21.17	0.0	22.00
		25	0	21.26	21.14	21.19	0.0	22.00	21.31	21.21	21.22	0.0	22.00
	16QAM	1	0	21.71	21.35	21.35	0.0	22.00	21.80	21.40	21.41	0.0	22.00
		1	12	21.72	21.25	21.26	0.0	22.00	21.79	21.34	21.34	0.0	22.00
		1	24	21.67	21.29	21.27	0.0	22.00	21.73	21.38	21.34	0.0	22.00
		12	0	21.48	21.26	21.33	0.0	22.00	21.51	21.29	21.36	0.0	22.00
		12	7	21.46	21.32	21.31	0.0	22.00	21.49	21.37	21.38	0.0	22.00
		12	13	21.36	21.24	21.23	0.0	22.00	21.40	21.30	21.28	0.0	22.00
		25	0	21.35	21.15	21.22	0.0	22.00	21.38	21.20	21.30	0.0	22.00
	64QAM	1	0	21.62	21.46	21.25	0.0	22.00	21.54	21.49	21.55	0.0	22.00
		1	12	21.67	21.50	21.27	0.0	22.00	21.60	21.62	21.60	0.0	22.00
		1	24	21.64	21.49	21.19	0.0	22.00	21.50	21.51	21.48	0.0	22.00
		12	0	21.40	21.34	21.40	0.0	22.00	21.35	21.28	21.32	0.0	22.00
		12	7	21.41	21.40	21.39	0.0	22.00	21.33	21.34	21.31	0.0	22.00
		12	13	21.33	21.33	21.31	0.0	22.00	21.24	21.26	21.24	0.0	22.00
		25	0	21.29	21.25	21.31	0.0	22.00	21.30	21.22	21.30	0.0	22.00
	256QAM	1	0	19.80	19.61	19.37	2.0	20.00	19.77	19.69	19.74	2.0	20.00
		1	12	19.73	19.71	19.37	2.0	20.00	19.70	19.71	19.68	2.0	20.00
		1	24	19.75	19.60	19.28	2.0	20.00	19.71	19.72	19.70	2.0	20.00
		12	0	19.69	19.62	19.67	2.0	20.00	19.63	19.57	19.61	2.0	20.00
		12	7	19.68	19.68	19.69	2.0	20.00	19.62	19.64	19.64	2.0	20.00
		12	13	19.59	19.56	19.59	2.0	20.00	19.55	19.57	19.55	2.0	20.00
		25	0	19.64	19.56	19.67	2.0	20.00	19.58	19.50	19.58	2.0	20.00

LTE Band 2 (Main 2. Ant) Measured Results_(Continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				18615	18900	19185			18615	18900	19185		
				1851.5 MHz	1880 MHz	1908.5 MHz			1851.5 MHz	1880 MHz	1908.5 MHz		
3 MHz	QPSK	1	0	21.27	21.20	21.17	0.0	22.00	21.29	21.29	21.21	0.0	22.00
		1	8	21.22	21.03	20.95	0.0	22.00	21.07	21.21	21.04	0.0	22.00
		1	14	21.11	21.01	21.05	0.0	22.00	21.16	21.14	21.06	0.0	22.00
		8	0	21.29	21.15	21.21	0.0	22.00	21.30	21.22	21.27	0.0	22.00
		8	4	21.26	21.22	21.19	0.0	22.00	21.32	21.31	21.28	0.0	22.00
		8	7	21.23	21.23	21.19	0.0	22.00	21.31	21.28	21.23	0.0	22.00
		15	0	21.24	21.10	21.19	0.0	22.00	21.29	21.17	21.23	0.0	22.00
	16QAM	1	0	21.69	21.31	21.13	0.0	22.00	21.25	21.68	21.35	0.0	22.00
		1	8	21.51	21.21	21.03	0.0	22.00	21.17	21.58	21.23	0.0	22.00
		1	14	21.51	21.16	20.98	0.0	22.00	21.09	21.57	21.17	0.0	22.00
		8	0	21.32	21.23	21.31	0.0	22.00	21.43	21.27	21.31	0.0	22.00
		8	4	21.37	21.32	21.30	0.0	22.00	21.42	21.38	21.33	0.0	22.00
		8	7	21.34	21.28	21.30	0.0	22.00	21.41	21.35	21.32	0.0	22.00
		15	0	21.30	21.12	21.23	0.0	22.00	21.33	21.25	21.21	0.0	22.00
	64QAM	1	0	21.43	21.62	21.72	0.0	22.00	21.52	21.46	21.17	0.0	22.00
		1	8	21.34	21.52	21.70	0.0	22.00	21.51	21.49	21.05	0.0	22.00
		1	14	21.31	21.56	21.62	0.0	22.00	21.37	21.39	20.99	0.0	22.00
		8	0	21.40	21.19	21.40	0.0	22.00	21.43	21.43	21.35	0.0	22.00
		8	4	21.38	21.24	21.41	0.0	22.00	21.45	21.45	21.33	0.0	22.00
		8	7	21.34	21.21	21.39	0.0	22.00	21.42	21.43	21.31	0.0	22.00
		15	0	21.31	21.28	21.33	0.0	22.00	21.26	21.19	21.33	0.0	22.00
	256QAM	1	0	19.47	19.56	20.05	2.0	20.00	20.00	19.93	19.61	2.0	20.00
		1	8	19.38	19.65	20.01	2.0	20.00	20.00	19.97	19.62	2.0	20.00
		1	14	19.29	19.50	19.90	2.0	20.00	19.90	19.92	19.44	2.0	20.00
		8	0	19.55	19.66	19.74	2.0	20.00	19.69	19.63	19.67	2.0	20.00
		8	4	19.58	19.78	19.73	2.0	20.00	19.68	19.71	19.73	2.0	20.00
		8	7	19.57	19.76	19.70	2.0	20.00	19.67	19.67	19.71	2.0	20.00
		15	0	19.67	19.56	19.66	2.0	20.00	19.62	19.53	19.60	2.0	20.00

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				18607	18900	19193			18607	18900	19193		
				1850.7 MHz	1880 MHz	1909.3 MHz			1850.7 MHz	1880 MHz	1909.3 MHz		
1.4 MHz	QPSK	1	0	21.18	21.09	21.04	0.0	22.00	21.04	21.19	21.13	0.0	22.00
		1	3	21.19	21.09	21.01	0.0	22.00	21.03	21.17	21.13	0.0	22.00
		1	5	21.11	21.00	20.94	0.0	22.00	20.98	21.09	21.05	0.0	22.00
		3	0	21.08	21.11	21.00	0.0	22.00	21.01	21.07	21.14	0.0	22.00
		3	1	21.14	21.15	21.07	0.0	22.00	21.03	21.10	21.16	0.0	22.00
		3	3	21.13	21.13	21.01	0.0	22.00	21.04	21.11	21.21	0.0	22.00
		6	0	21.13	21.14	21.10	0.0	22.00	21.12	21.15	21.18	0.0	22.00
	16QAM	1	0	21.32	21.56	21.06	0.0	22.00	21.09	21.31	21.62	0.0	22.00
		1	3	21.38	21.54	21.12	0.0	22.00	21.16	21.40	21.61	0.0	22.00
		1	5	21.25	21.48	21.06	0.0	22.00	21.05	21.22	21.54	0.0	22.00
		3	0	21.23	21.33	21.29	0.0	22.00	21.31	21.21	21.40	0.0	22.00
		3	1	21.22	21.29	21.27	0.0	22.00	21.31	21.23	21.37	0.0	22.00
		3	3	21.27	21.28	21.27	0.0	22.00	21.34	21.25	21.32	0.0	22.00
		6	0	21.32	21.01	21.29	0.0	22.00	21.31	21.31	21.07	0.0	22.00
	64QAM	1	0	21.37	21.71	21.39	0.0	22.00	21.16	21.33	21.15	0.0	22.00
		1	3	21.38	21.68	21.38	0.0	22.00	21.21	21.44	21.14	0.0	22.00
		1	5	21.28	21.68	21.28	0.0	22.00	21.09	21.22	21.02	0.0	22.00
		3	0	21.35	21.60	21.33	0.0	22.00	21.32	21.26	21.32	0.0	22.00
		3	1	21.42	21.58	21.40	0.0	22.00	21.46	21.25	21.40	0.0	22.00
		3	3	21.43	21.55	21.42	0.0	22.00	21.44	21.21	21.39	0.0	22.00
		6	0	21.56	21.25	21.51	0.0	22.00	21.28	21.18	21.24	0.0	22.00
	256QAM	1	0	19.76	19.79	19.58	2.0	20.00	19.59	19.59	19.61	2.0	20.00
		1	3	19.80	19.87	19.71	2.0	20.00	19.73	19.69	19.68	2.0	20.00
		1	5	19.67	19.70	19.54	2.0	20.00	19.54	19.54	19.51	2.0	20.00
		3	0	19.50	19.55	19.67	2.0	20.00	19.40	19.42	19.37	2.0	20.00
		3	1	19.59	19.59	19.62	2.0	20.00	19.44	19.43	19.43	2.0	20.00
		3	3	19.48	19.49	19.61	2.0	20.00	19.33	19.33	19.31	2.0	20.00
		6	0	19.54	19.52	19.63	2.0	20.00	19.41	19.42	19.37	2.0	20.00

LTE Band 66 (Main 2. Ant) Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Reduced Average Power (dBm) Hotspot back-off					Reduced Average Power (dBm) Proximity sensor back-off				
				Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				132072	132322	132572			132072	132322	132572		
				1720 MHz	1745 MHz	1770 MHz			1720 MHz	1745 MHz	1770 MHz		
20 MHz	QPSK	1	0	20.87	21.50	20.96	0.0	22.00	20.95	21.45	20.98	0.0	22.00
		1	49	20.90	21.00	20.85	0.0	22.00	21.01	21.04	20.90	0.0	22.00
		1	99	21.02	21.42	20.83	0.0	22.00	21.04	21.30	20.88	0.0	22.00
		50	0	21.06	21.51	20.99	0.0	22.00	21.07	21.44	21.04	0.0	22.00
		50	24	21.06	21.25	20.99	0.0	22.00	21.10	21.11	21.02	0.0	22.00
		50	50	21.08	21.31	20.94	0.0	22.00	21.10	21.25	20.99	0.0	22.00
		100	0	21.09	21.06	20.97	0.0	22.00	21.10	21.10	21.02	0.0	22.00
	16QAM	1	0	21.55	21.50	21.37	0.0	22.00	21.52	21.40	21.40	0.0	22.00
		1	49	21.55	21.51	21.24	0.0	22.00	21.54	21.55	21.31	0.0	22.00
		1	99	21.55	21.46	21.24	0.0	22.00	21.49	21.50	21.26	0.0	22.00
		50	0	21.09	21.10	20.98	0.0	22.00	21.09	21.13	21.03	0.0	22.00
		50	24	21.12	21.11	20.99	0.0	22.00	21.14	21.13	21.01	0.0	22.00
		50	50	21.13	21.06	20.91	0.0	22.00	21.15	21.07	20.98	0.0	22.00
		100	0	21.11	21.06	20.99	0.0	22.00	21.14	21.08	21.03	0.0	22.00
	64QAM	1	0	21.34	21.40	21.32	0.0	22.00	21.34	21.41	21.32	0.0	22.00
		1	49	21.42	21.43	21.20	0.0	22.00	21.42	21.44	21.21	0.0	22.00
		1	99	21.41	21.45	21.10	0.0	22.00	21.43	21.43	21.15	0.0	22.00
		50	0	21.16	21.14	21.04	0.0	22.00	21.15	21.18	21.07	0.0	22.00
		50	24	21.21	21.15	21.03	0.0	22.00	21.18	21.17	21.06	0.0	22.00
		50	50	21.19	21.11	21.02	0.0	22.00	21.18	21.13	21.02	0.0	22.00
		100	0	21.16	21.09	21.05	0.0	22.00	21.15	21.11	21.08	0.0	22.00
	256QAM	1	0	19.45	19.56	19.30	2.0	20.00	19.43	19.59	19.30	2.0	20.00
		1	49	19.54	19.57	19.19	2.0	20.00	19.54	19.64	19.23	2.0	20.00
		1	99	19.60	19.49	19.17	2.0	20.00	19.58	19.50	19.18	2.0	20.00
		50	0	19.35	19.39	19.34	2.0	20.00	19.37	19.42	19.36	2.0	20.00
		50	24	19.42	19.40	19.34	2.0	20.00	19.42	19.43	19.34	2.0	20.00
		50	50	19.44	19.37	19.30	2.0	20.00	19.42	19.37	19.33	2.0	20.00
		100	0	19.37	19.38	19.32	2.0	20.00	19.35	19.38	19.33	2.0	20.00
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				132047	132322	132597			132047	132322	132597		
				1717.5 MHz	1745 MHz	1772.5 MHz			1717.5 MHz	1745 MHz	1772.5 MHz		
15 MHz	QPSK	1	0	20.89	20.92	20.96	0.0	22.00	20.96	21.01	21.03	0.0	22.00
		1	37	20.92	20.92	20.87	0.0	22.00	20.98	21.02	20.90	0.0	22.00
		1	74	20.96	20.84	20.84	0.0	22.00	20.99	20.94	20.92	0.0	22.00
		36	0	20.91	21.00	20.93	0.0	22.00	20.94	21.07	21.00	0.0	22.00
		36	20	21.00	20.98	20.96	0.0	22.00	21.05	21.08	20.99	0.0	22.00
		36	39	21.01	20.94	20.91	0.0	22.00	21.05	21.02	20.95	0.0	22.00
		75	0	20.94	20.96	20.93	0.0	22.00	21.02	21.04	20.98	0.0	22.00
	16QAM	1	0	21.29	20.94	21.30	0.0	22.00	21.37	21.02	21.37	0.0	22.00
		1	37	21.37	20.98	21.31	0.0	22.00	21.45	21.03	21.38	0.0	22.00
		1	74	21.36	20.89	21.21	0.0	22.00	21.43	20.97	21.28	0.0	22.00
		36	0	20.89	20.99	20.98	0.0	22.00	20.94	21.07	21.06	0.0	22.00
		36	20	20.98	21.00	20.98	0.0	22.00	21.01	21.08	21.06	0.0	22.00
		36	39	20.99	20.97	20.99	0.0	22.00	21.04	21.04	21.07	0.0	22.00
		75	0	20.97	20.97	20.92	0.0	22.00	21.03	21.07	21.01	0.0	22.00
	64QAM	1	0	21.52	21.38	21.19	0.0	22.00	21.54	21.40	21.22	0.0	22.00
		1	37	21.64	21.45	21.10	0.0	22.00	21.66	21.46	21.13	0.0	22.00
		1	74	21.66	21.32	21.05	0.0	22.00	21.69	21.34	21.07	0.0	22.00
		36	0	20.99	21.14	21.09	0.0	22.00	21.02	21.15	21.12	0.0	22.00
		36	20	21.10	21.12	21.10	0.0	22.00	21.12	21.15	21.11	0.0	22.00
		36	39	21.08	21.10	21.06	0.0	22.00	21.13	21.12	21.09	0.0	22.00
		75	0	21.11	21.07	21.02	0.0	22.00	21.12	21.09	21.06	0.0	22.00
	256QAM	1	0	19.49	19.78	19.13	2.0	20.00	19.52	19.76	19.16	2.0	20.00
		1	37	19.53	19.86	19.12	2.0	20.00	19.63	19.82	19.16	2.0	20.00
		1	74	19.55	19.67	19.04	2.0	20.00	19.65	19.70	19.04	2.0	20.00
		36	0	19.21	19.39	19.29	2.0	20.00	19.25	19.39	19.31	2.0	20.00
		36	20	19.34	19.39	19.28	2.0	20.00	19.38	19.42	19.30	2.0	20.00
		36	39	19.35	19.35	19.28	2.0	20.00	19.36	19.36	19.28	2.0	20.00
		75	0	19.32	19.35	19.29	2.0	20.00	19.37	19.39	19.30	2.0	20.00

LTE Band 66 (Main 2. Ant) Measured Results (Continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				132022	132322	132622			132022	132322	132622		
				1715 MHz	1745 MHz	1775 MHz			1715 MHz	1745 MHz	1775 MHz		
10 MHz	QPSK	1	0	20.98	21.09	20.89	0.0	22.00	21.07	21.08	21.02	0.0	22.00
		1	25	20.98	21.10	20.87	0.0	22.00	21.05	21.11	20.93	0.0	22.00
		1	49	21.00	21.03	20.82	0.0	22.00	21.07	21.02	21.00	0.0	22.00
		25	0	21.14	21.14	21.07	0.0	22.00	21.20	21.17	21.12	0.0	22.00
		25	12	21.14	21.14	21.06	0.0	22.00	21.17	21.16	21.13	0.0	22.00
		25	25	21.13	21.17	21.05	0.0	22.00	21.15	21.25	21.12	0.0	22.00
		50	0	21.17	21.11	21.06	0.0	22.00	21.17	21.15	21.15	0.0	22.00
	16QAM	1	0	20.95	21.50	20.95	0.0	22.00	21.48	21.13	20.96	0.0	22.00
		1	25	20.98	21.52	20.96	0.0	22.00	21.48	21.16	20.96	0.0	22.00
		1	49	20.93	21.48	20.85	0.0	22.00	21.51	21.05	20.90	0.0	22.00
		25	0	21.17	21.19	21.13	0.0	22.00	21.16	21.28	21.13	0.0	22.00
		25	12	21.19	21.24	21.15	0.0	22.00	21.21	21.27	21.19	0.0	22.00
		25	25	21.14	21.30	21.13	0.0	22.00	21.20	21.34	21.14	0.0	22.00
		50	0	21.12	21.16	21.06	0.0	22.00	21.15	21.22	21.12	0.0	22.00
	64QAM	1	0	21.25	21.39	21.40	0.0	22.00	21.22	21.41	21.46	0.0	22.00
		1	25	21.28	21.50	21.42	0.0	22.00	21.26	21.50	21.43	0.0	22.00
		1	49	21.30	21.29	21.32	0.0	22.00	21.33	21.29	21.33	0.0	22.00
		25	0	21.27	21.30	21.14	0.0	22.00	21.25	21.31	21.18	0.0	22.00
		25	12	21.26	21.30	21.17	0.0	22.00	21.26	21.27	21.17	0.0	22.00
		25	25	21.24	21.32	21.15	0.0	22.00	21.25	21.31	21.16	0.0	22.00
		50	0	21.22	21.19	21.11	0.0	22.00	21.25	21.18	21.14	0.0	22.00
	256QAM	1	0	19.04	19.47	19.99	2.0	20.00	19.16	19.54	19.98	2.0	20.00
		1	25	19.18	19.56	19.85	2.0	20.00	19.20	19.54	19.92	2.0	20.00
		1	49	19.08	19.46	19.86	2.0	20.00	19.23	19.45	19.90	2.0	20.00
		25	0	19.42	19.58	19.51	2.0	20.00	19.45	19.63	19.55	2.0	20.00
		25	12	19.45	19.61	19.50	2.0	20.00	19.48	19.61	19.52	2.0	20.00
		25	25	19.43	19.64	19.48	2.0	20.00	19.43	19.67	19.51	2.0	20.00
		50	0	19.42	19.53	19.44	2.0	20.00	19.42	19.55	19.49	2.0	20.00

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				131997	132322	132647			131997	132322	132647		
				1712.5 MHz	1745 MHz	1777.5 MHz			1712.5 MHz	1745 MHz	1777.5 MHz		
5 MHz	QPSK	1	0	21.02	21.17	21.04	0.0	22.00	21.13	21.21	21.10	0.0	22.00
		1	12	21.01	21.08	20.93	0.0	22.00	21.10	21.10	21.04	0.0	22.00
		1	24	21.05	21.12	21.07	0.0	22.00	21.13	21.15	21.06	0.0	22.00
		12	0	21.11	21.15	21.03	0.0	22.00	21.11	21.21	21.12	0.0	22.00
		12	7	21.11	21.13	21.09	0.0	22.00	21.11	21.24	21.15	0.0	22.00
		12	13	21.07	21.11	21.02	0.0	22.00	21.11	21.20	21.15	0.0	22.00
		25	0	21.06	21.16	21.05	0.0	22.00	21.12	21.24	21.10	0.0	22.00
	16QAM	1	0	21.12	21.33	21.51	0.0	22.00	21.22	21.70	21.20	0.0	22.00
		1	12	21.04	21.21	21.49	0.0	22.00	21.18	21.69	21.10	0.0	22.00
		1	24	21.15	21.32	21.46	0.0	22.00	21.26	21.69	21.17	0.0	22.00
		12	0	21.14	21.25	21.19	0.0	22.00	21.18	21.39	21.13	0.0	22.00
		12	7	21.10	21.29	21.20	0.0	22.00	21.19	21.39	21.14	0.0	22.00
		12	13	21.10	21.25	21.19	0.0	22.00	21.17	21.38	21.13	0.0	22.00
		25	0	21.01	21.21	21.10	0.0	22.00	21.16	21.29	21.06	0.0	22.00
	64QAM	1	0	21.27	21.18	21.50	0.0	22.00	21.29	21.21	21.54	0.0	22.00
		1	12	21.32	21.22	21.47	0.0	22.00	21.36	21.22	21.49	0.0	22.00
		1	24	21.33	21.15	21.48	0.0	22.00	21.37	21.16	21.49	0.0	22.00
		12	0	21.22	21.31	21.10	0.0	22.00	21.22	21.30	21.12	0.0	22.00
		12	7	21.19	21.28	21.10	0.0	22.00	21.20	21.31	21.06	0.0	22.00
		12	13	21.18	21.26	21.09	0.0	22.00	21.22	21.28	21.11	0.0	22.00
		25	0	21.17	21.22	21.08	0.0	22.00	21.16	21.24	21.08	0.0	22.00
	256QAM	1	0	19.37	19.33	19.56	2.0	20.00	19.37	19.34	19.60	2.0	20.00
		1	12	19.48	19.35	19.49	2.0	20.00	19.48	19.37	19.50	2.0	20.00
		1	24	19.43	19.30	19.58	2.0	20.00	19.45	19.27	19.60	2.0	20.00
		12	0	19.43	19.55	19.38	2.0	20.00	19.40	19.63	19.42	2.0	20.00
		12	7	19.44	19.61	19.40	2.0	20.00	19.45	19.61	19.45	2.0	20.00
		12	13	19.38	19.56	19.38	2.0	20.00	19.41	19.58	19.42	2.0	20.00
		25	0	19.43	19.59	19.40	2.0	20.00	19.42	19.65	19.43	2.0	20.00

LTE Band 66 (Main 2. Ant) Measured Results (Continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				131987	132322	132657			131987	132322	132657		
				1711.5 MHz	1745 MHz	1778.5 MHz			1711.5 MHz	1745 MHz	1778.5 MHz		
3 MHz	QPSK	1	0	21.06	21.21	21.11	0.0	22.00	21.15	21.20	21.01	0.0	22.00
		1	8	20.99	21.08	21.04	0.0	22.00	21.08	21.09	20.87	0.0	22.00
		1	14	21.06	21.22	21.09	0.0	22.00	21.13	21.16	21.04	0.0	22.00
		8	0	21.13	21.26	21.09	0.0	22.00	21.14	21.24	21.08	0.0	22.00
		8	4	21.18	21.27	21.11	0.0	22.00	21.17	21.26	21.12	0.0	22.00
		8	7	21.17	21.30	21.12	0.0	22.00	21.21	21.30	21.13	0.0	22.00
		15	0	21.15	21.28	21.10	0.0	22.00	21.17	21.25	21.11	0.0	22.00
	16QAM	1	0	21.21	21.20	21.45	0.0	22.00	21.54	21.30	20.95	0.0	22.00
		1	8	21.16	21.11	21.41	0.0	22.00	21.48	21.23	20.91	0.0	22.00
		1	14	21.19	21.08	21.44	0.0	22.00	21.57	21.24	20.93	0.0	22.00
		8	0	21.19	21.36	21.12	0.0	22.00	21.16	21.26	21.18	0.0	22.00
		8	4	21.26	21.37	21.19	0.0	22.00	21.25	21.30	21.21	0.0	22.00
		8	7	21.25	21.40	21.20	0.0	22.00	21.24	21.36	21.21	0.0	22.00
		15	0	21.10	21.31	21.15	0.0	22.00	21.20	21.25	21.12	0.0	22.00
	64QAM	1	0	21.52	21.70	21.14	0.0	22.00	21.55	21.72	21.13	0.0	22.00
		1	8	21.40	21.88	21.16	0.0	22.00	21.42	21.77	21.13	0.0	22.00
		1	14	21.52	21.68	21.19	0.0	22.00	21.54	21.71	21.18	0.0	22.00
		8	0	21.11	21.31	21.14	0.0	22.00	21.12	21.32	21.15	0.0	22.00
		8	4	21.13	21.36	21.13	0.0	22.00	21.15	21.38	21.15	0.0	22.00
		8	7	21.14	21.37	21.15	0.0	22.00	21.13	21.39	21.17	0.0	22.00
		15	0	21.19	21.26	21.11	0.0	22.00	21.16	21.29	21.14	0.0	22.00
	256QAM	1	0	19.41	19.96	19.21	2.0	20.00	19.39	19.98	19.23	2.0	20.00
		1	8	19.46	20.00	19.22	2.0	20.00	19.46	20.03	19.17	2.0	20.00
		1	14	19.40	19.96	19.18	2.0	20.00	19.37	19.98	19.19	2.0	20.00
		8	0	19.49	19.68	19.36	2.0	20.00	19.49	19.68	19.34	2.0	20.00
		8	4	19.57	19.66	19.35	2.0	20.00	19.57	19.69	19.38	2.0	20.00
		8	7	19.60	19.66	19.38	2.0	20.00	19.59	19.71	19.38	2.0	20.00
		15	0	19.46	19.63	19.48	2.0	20.00	19.48	19.62	19.49	2.0	20.00

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				131979	132322	132665			131979	132322	132665		
				1710.7 MHz	1745 MHz	1779.3 MHz			1710.7 MHz	1745 MHz	1779.3 MHz		
1.4 MHz	QPSK	1	0	20.94	21.18	20.93	0.0	22.00	20.95	21.09	21.01	0.0	22.00
		1	3	20.98	21.19	20.96	0.0	22.00	20.98	21.11	21.04	0.0	22.00
		1	5	20.96	21.18	20.92	0.0	22.00	20.95	21.12	21.00	0.0	22.00
		3	0	20.95	21.12	20.96	0.0	22.00	21.00	21.06	20.95	0.0	22.00
		3	1	21.00	21.11	21.01	0.0	22.00	21.06	21.14	20.97	0.0	22.00
		3	3	20.96	21.15	21.04	0.0	22.00	21.08	21.06	20.96	0.0	22.00
		6	0	21.02	21.17	21.02	0.0	22.00	21.06	21.21	20.97	0.0	22.00
	16QAM	1	0	21.02	21.26	21.41	0.0	22.00	21.47	21.13	21.09	0.0	22.00
		1	3	21.13	21.35	21.43	0.0	22.00	21.50	21.22	21.18	0.0	22.00
		1	5	21.03	21.29	21.40	0.0	22.00	21.43	21.14	21.14	0.0	22.00
		3	0	21.23	21.18	21.19	0.0	22.00	21.26	21.33	20.98	0.0	22.00
		3	1	21.29	21.19	21.20	0.0	22.00	21.22	21.36	21.05	0.0	22.00
		3	3	21.28	21.24	21.22	0.0	22.00	21.23	21.38	21.07	0.0	22.00
		6	0	21.23	21.32	20.93	0.0	22.00	20.94	21.35	21.14	0.0	22.00
	64QAM	1	0	21.34	21.71	21.08	0.0	22.00	21.18	21.72	21.07	0.0	22.00
		1	3	21.76	21.80	21.14	0.0	22.00	21.36	21.71	21.15	0.0	22.00
		1	5	21.72	21.71	21.07	0.0	22.00	21.31	21.70	21.07	0.0	22.00
		3	0	21.43	21.59	21.10	0.0	22.00	21.04	21.47	21.12	0.0	22.00
		3	1	21.51	21.50	21.17	0.0	22.00	21.06	21.49	21.16	0.0	22.00
		3	3	21.51	21.46	21.21	0.0	22.00	21.05	21.48	21.20	0.0	22.00
		6	0	21.12	21.13	21.32	0.0	22.00	21.14	21.16	21.35	0.0	22.00
	256QAM	1	0	19.69	19.65	19.39	2.0	20.00	19.40	19.69	19.44	2.0	20.00
		1	3	19.82	19.81	19.81	2.0	20.00	19.50	19.81	19.34	2.0	20.00
		1	5	19.63	19.66	19.65	2.0	20.00	19.37	19.65	19.66	2.0	20.00
		3	0	19.39	19.45	19.47	2.0	20.00	19.39	19.47	19.37	2.0	20.00
		3	1	19.52	19.47	19.52	2.0	20.00	19.40	19.49	19.53	2.0	20.00
		3	3	19.44	19.45	19.44	2.0	20.00	19.35	19.41	19.46	2.0	20.00
		6	0	19.44	19.49	19.50	2.0	20.00	19.39	19.45	19.42	2.0	20.00

9.4. NR (Sub 6GHz)

The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS 138.521-1 specification.

UE Power Class: 3 (23 +/- 2dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS138.521-1.

Table 6.2.2.3-1: Maximum Power Reduction (MPR) for Power 3

Modulation	MPR (dB)		
	Edge RB allocations	Outer RB allocations	Inner RB allocations
DFT-s-OFDM PI/2 BPSK	≤ 3.5[1]	≤ 1.2[1]	≤ 0.2[1]
	≤ 0.5[2]		0[2]
DFT-s-OFDM QPSK	≤ 1		0
DFT-s-OFDM 16 QAM	≤ 2		≤ 1
DFT-s-OFDM 64 QAM	≤ 2.5		
DFT-s-OFDM 256 QAM	≤ 4.5		
CP-OFDM QPSK	≤ 3		≤ 1.5
CP-OFDM 16 QAM	≤ 3		≤ 2
CP-OFDM 64 QAM	≤ 3.5		
CP-OFDM 256 QAM	≤ 6.5		

NOTE 1: Applicable for UE operating in TDD mode with PI/2 BPSK modulation and UE indicates support for UE capability *powerBoosting-pi2BPSK* and if the IE *powerBoostPi2BPSK* is set to 1 and 40 % or less slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79. The reference power of 0dB MPR is 26dBm.

NOTE 2: Applicable for UE operating in FDD mode, or in TDD mode in bands other than n40, n41, n77, n78 and n79 and if the IE *powerBoostPi2BPSK* is set to 0 and if more than 40% of slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79.

The allowed A-MPR values specified below in Table 6.2.3.3.1-1 of 3GPP TS138.521-1 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signaling Value of "NS_01"

Table 6.2.3.3.1-1: Additional maximum power reduction (A-MPR)

Network Signalling label	Requirements (subclause)	NR Band	Channel bandwidth (MHz)	Resources Blocks (N_{RB})	A-MPR (dB)
NS_01		Table 5.2-1	5, 10, 15, 20, 25, 30, 40, 50, 60, 80, 90, 100	Table 5.3.2-1	N/A

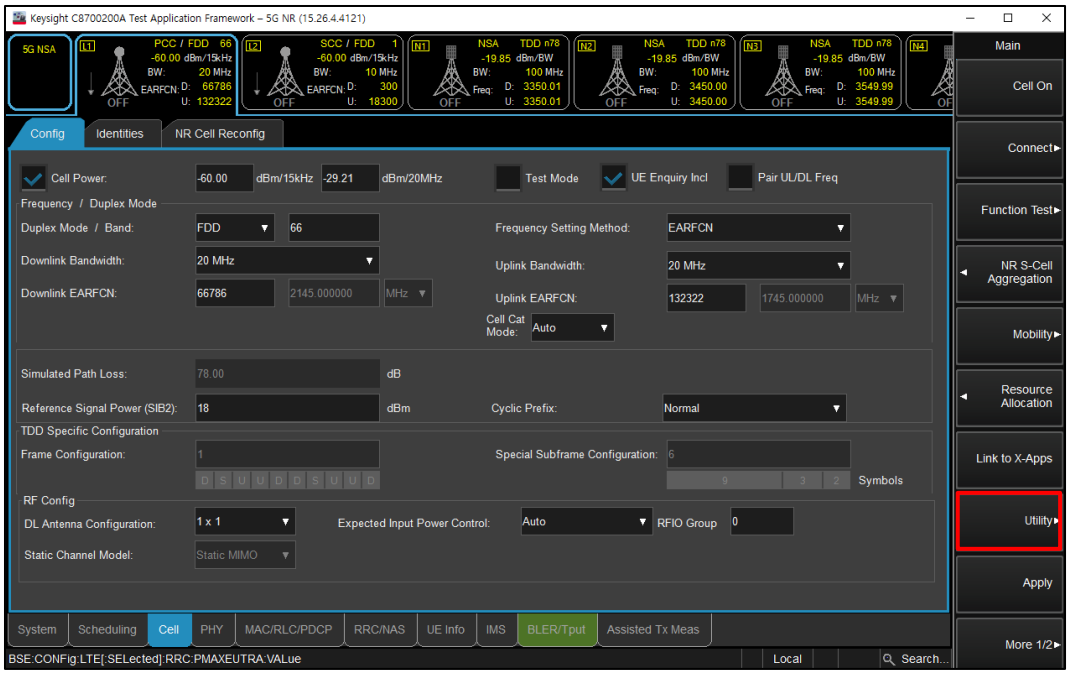
Uplink RB allocations were used to Table 6.1-1 of the 3GPP TS 138.521-1.

Channel Bandwidth	SCS(kHz)	OFDM	RB allocation							
			Edge_Full_Left	Edge_Full_Right	Edge_1RB_Left	Edge_1RB_Right	Outer_Full	Inner_Full	Inner_1RB_Left	Inner_1RB_Right
5MHz	15	DFT-s	2@0	2@23	1@0	1@24	25@0	12@6	1@1	1@23
		CP	2@0	2@23	1@0	1@24	25@0	13@6	1@1	1@23
	30	DFT-s	2@0	2@9	1@0	1@10	10@0	5@2[1]	1@1	1@9
		CP	2@0	2@9	1@0	1@10	11@0	5@2[1]	1@1	1@9
	60	DFT-s	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		CP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10MHz	15	DFT-s	2@0	2@50	1@0	1@51	50@0	25@12	1@1	1@50
		CP	2@0	2@50	1@0	1@51	52@0	26@13	1@1	1@50
	30	DFT-s	2@0	2@22	1@0	1@23	24@0	12@6	1@1	1@22
		CP	2@0	2@22	1@0	1@23	24@0	12@6	1@1	1@22
	60	DFT-s	2@0	2@9	1@0	1@10	10@0	5@2[1]	1@1	1@9
		CP	2@0	2@9	1@0	1@10	11@0	5@2[1]	1@1	1@9
15MHz	15	DFT-s	2@0	2@77	1@0	1@78	75@0	36@18	1@1	1@77
		CP	2@0	2@77	1@0	1@78	79@0	39@19[1]	1@1	1@77
	30	DFT-s	2@0	2@36	1@0	1@37	36@0	18@9	1@1	1@36
		CP	2@0	2@36	1@0	1@37	38@0	19@9	1@1	1@36
	60	DFT-s	2@0	2@16	1@0	1@17	18@0	9@4	1@1	1@16
		CP	2@0	2@16	1@0	1@17	18@0	9@4	1@1	1@16
20MHz	15	DFT-s	2@0	2@104	1@0	1@105	100@0	50@25	1@1	1@104
		CP	2@0	2@104	1@0	1@105	106@0	53@26	1@1	1@104
	30	DFT-s	2@0	2@49	1@0	1@50	50@0	25@12	1@1	1@49
		CP	2@0	2@49	1@0	1@50	51@0	25@12[1]	1@1	1@49
	60	DFT-s	2@0	2@22	1@0	1@23	24@0	12@6	1@1	1@22
		CP	2@0	2@22	1@0	1@23	24@0	12@6	1@1	1@22

Procedures used to establish power measurement for NR Bands

Switching to NSA mode or SA mode

- Click the “Utility” button in the right of Test application screen
- Select “5G NR NSA” in the “TA Mode Switch” for NSA mode
- Select “5G NR Standalone” in the “TA Mode Switch” for SA mode

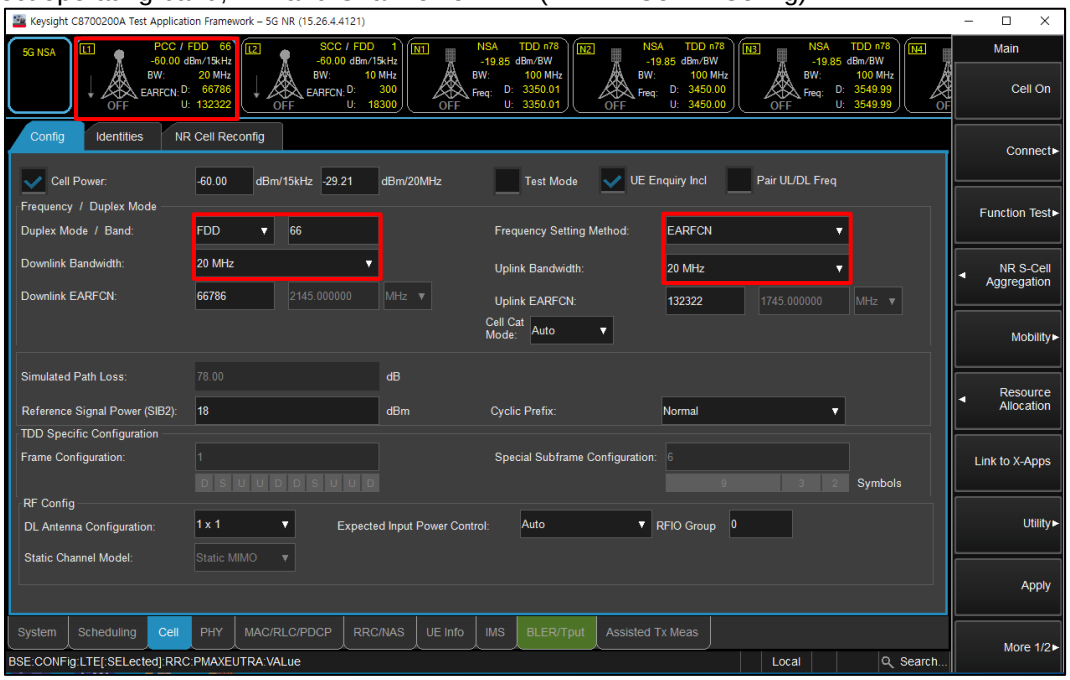


(Figure 1-1)

(Figure 1-2)

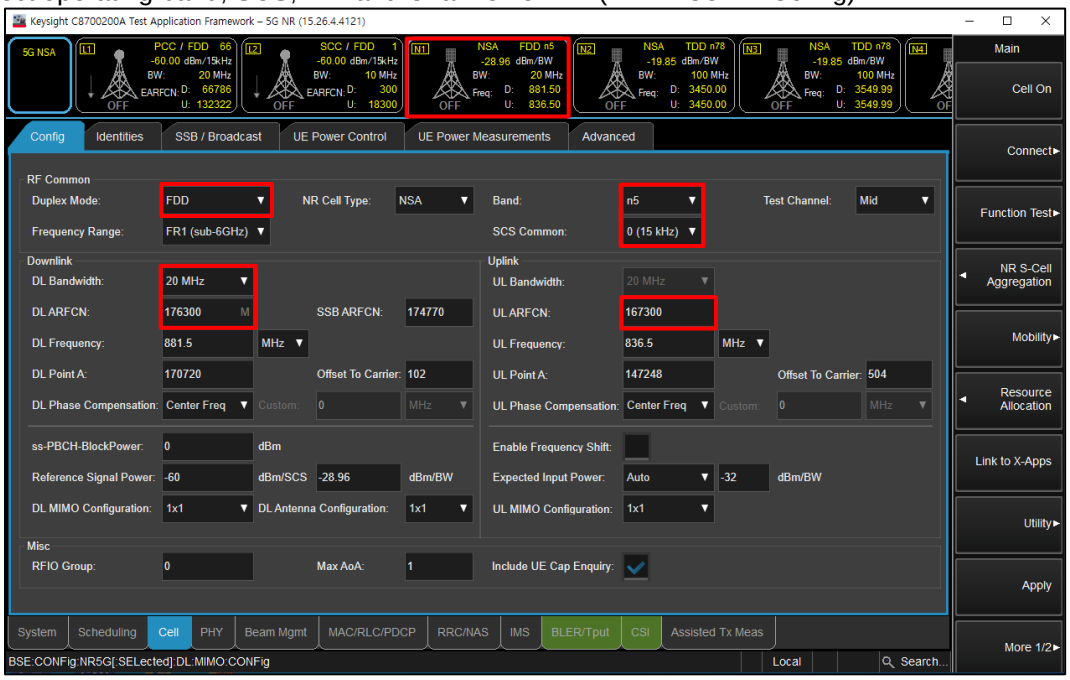
NSA Mode

- Select operating band, BW and Channel for LTE (LTE -> Cell -> Config)



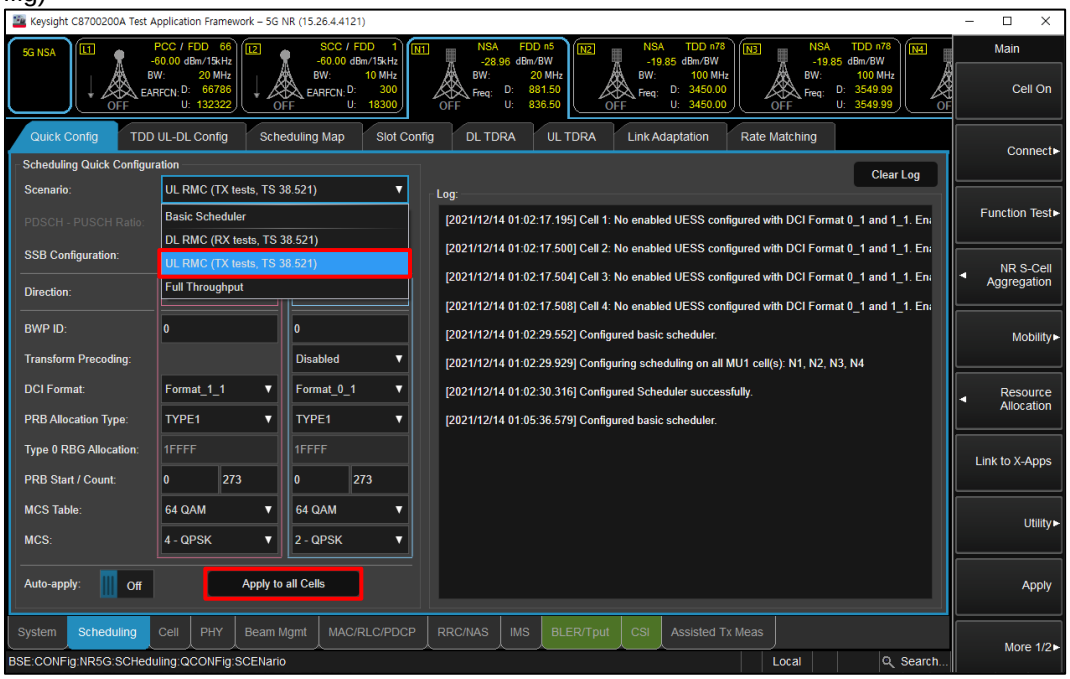
(Figure 2-1)

- Select operating band, SCS, BW and Channel for NR (NR -> Cell -> Config)



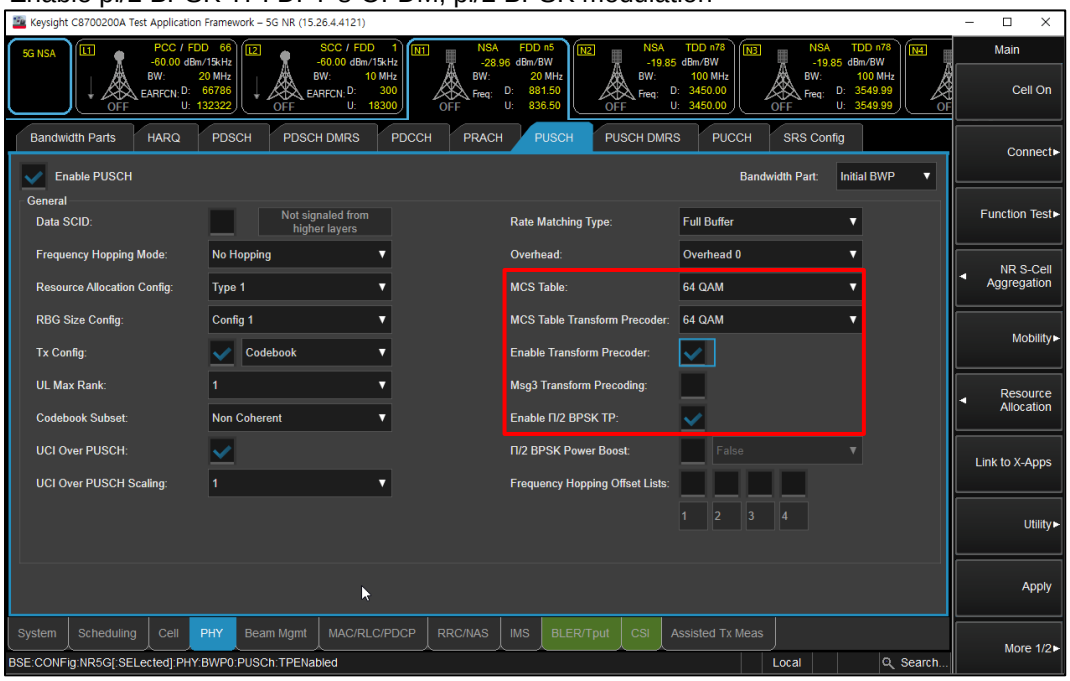
(Figure 2-2)

- Select “UL RMC (TX tests, TS 38.521)” for maximum power RB scheduling (NR -> Scheduling -> Quick Config)



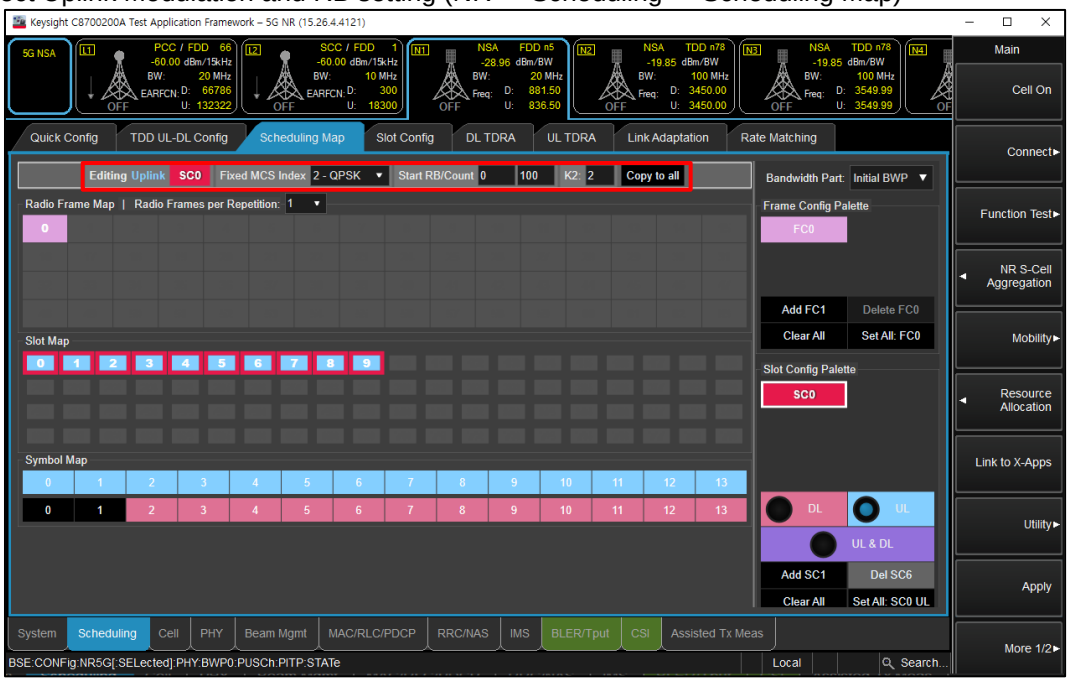
(Figure 2-3)

- To set waveform for NR Band (NR -> PHY -> PUSCH)
  - Select highest modulation in the MCS Table and MCS Table Transform Precoder
  - Enable Transform Precoder: DFT-s-OFDM / disable for CP-OFDM
  - Enable pi/2 BPSK TP: DFT-s-OFDM, pi/2 BPSK modulation



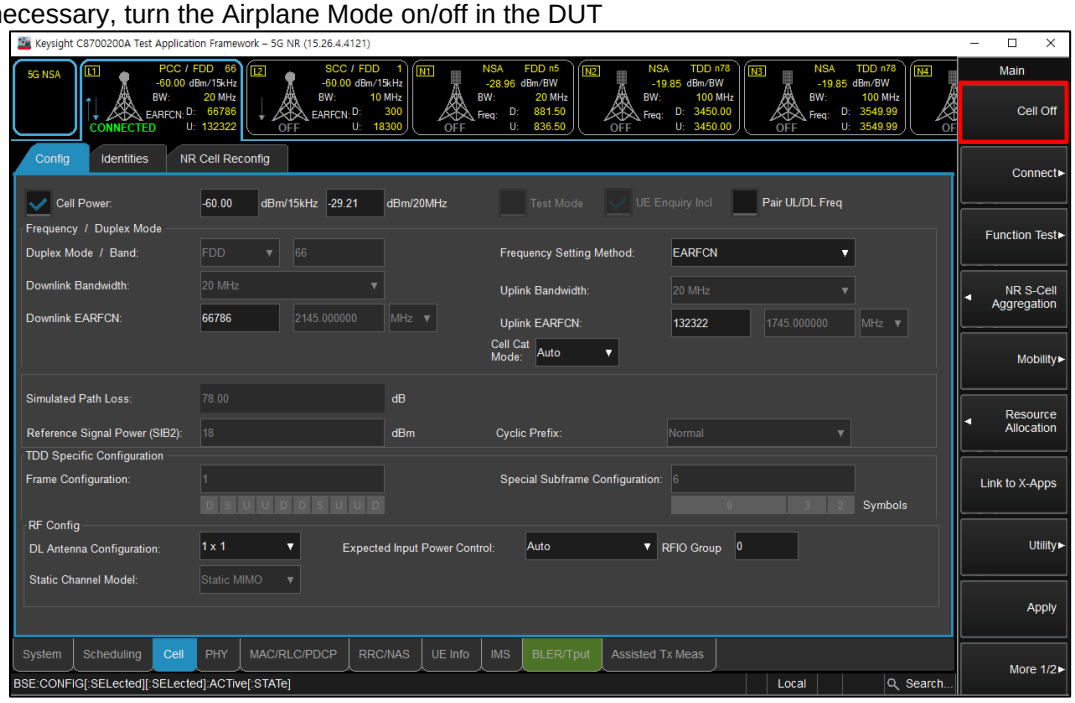
(Figure 2-4)

- Select Uplink Modulation and RB setting (NR -> Scheduling -> Scheduling Map)



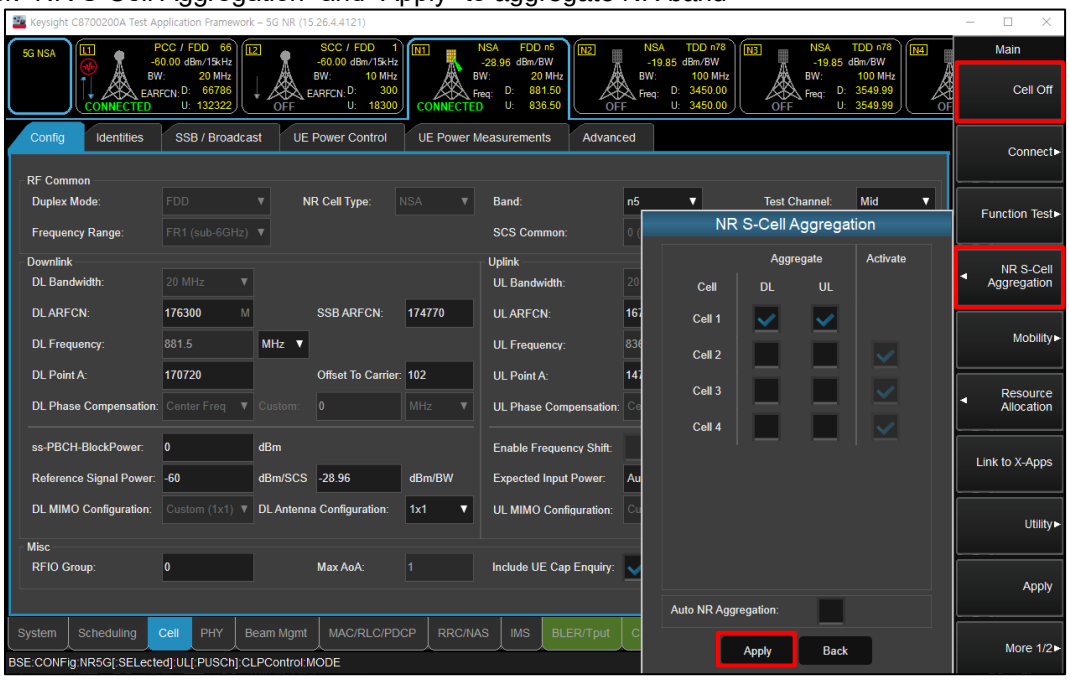
(Figure 2-5)

- Click “Cell On” button in the right of Test application screen in the LTE tab
- If necessary, turn the Airplane Mode on/off in the DUT



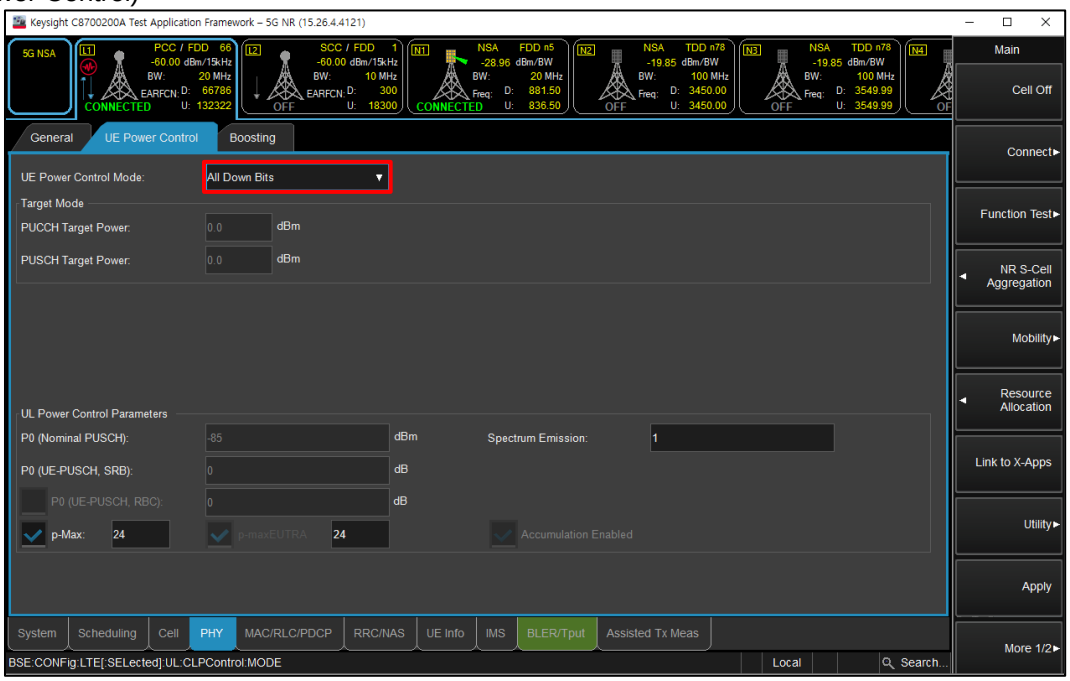
(Figure 2-6)

- Click “Cell On” button in the right of Test application screen in the NR tab
- Click “NR S-Cell Aggregation” and “Apply” to aggregate NR band



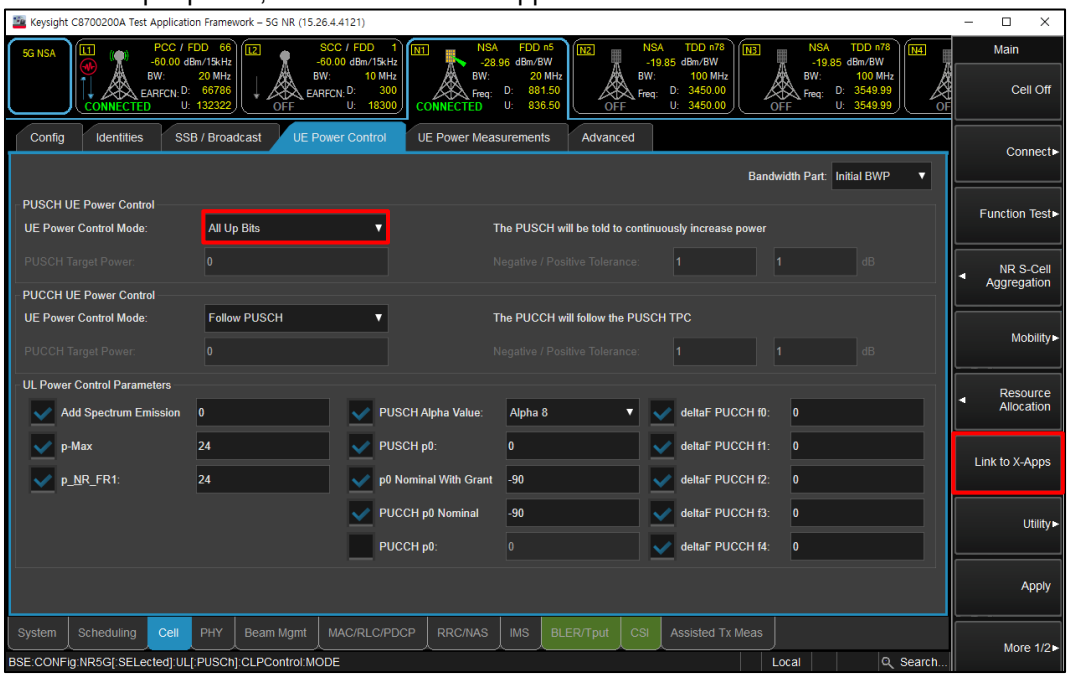
(Figure 2-7)

- Select “All Down Bits” of UL Power control Mode in LTE tab for NR maximum power (LTE -> PHY -> UE Power Control)



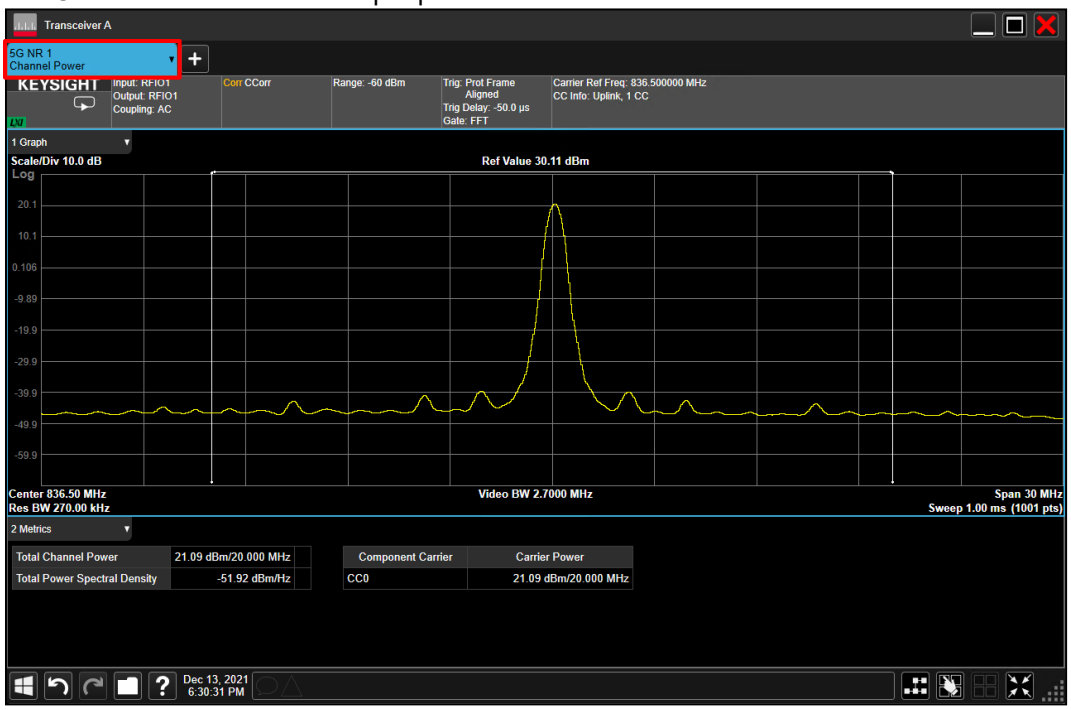
(Figure 2-8)

- Select “All Up Bits” of UL Power control Mode in NR tab for NR maximum power (NR -> Cell -> UE Power Control)
- To read the output power, click the “Link to X-Apps”



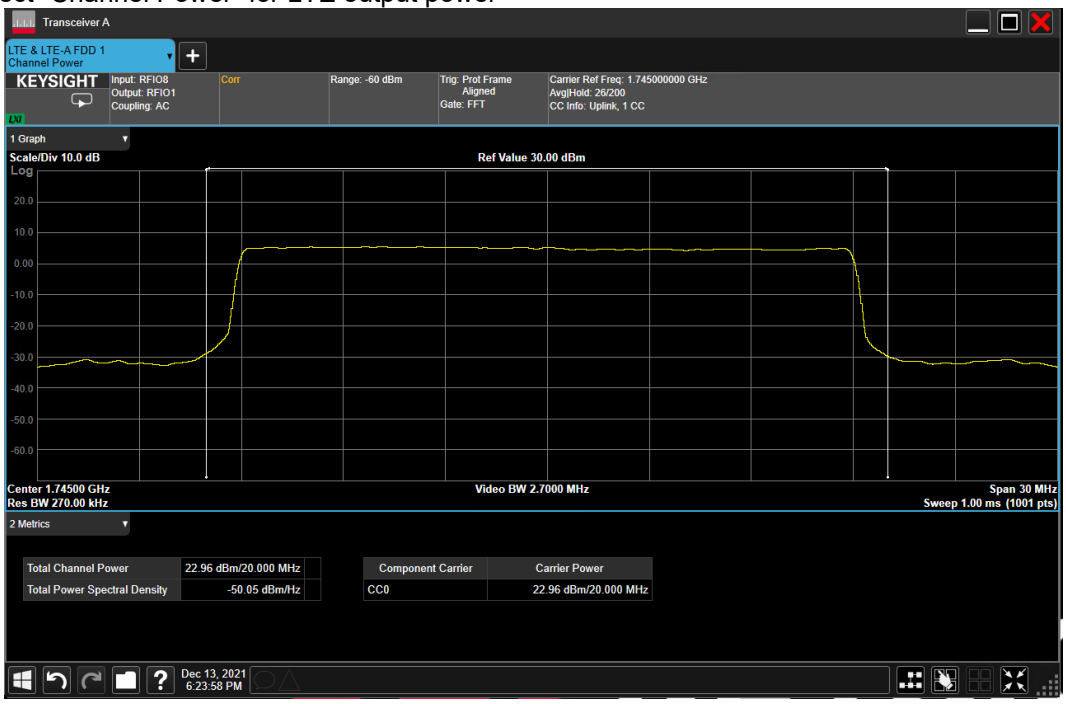
(Figure 2-9)

- Select “Channel Power” for NR output power



(Figure 2-10)

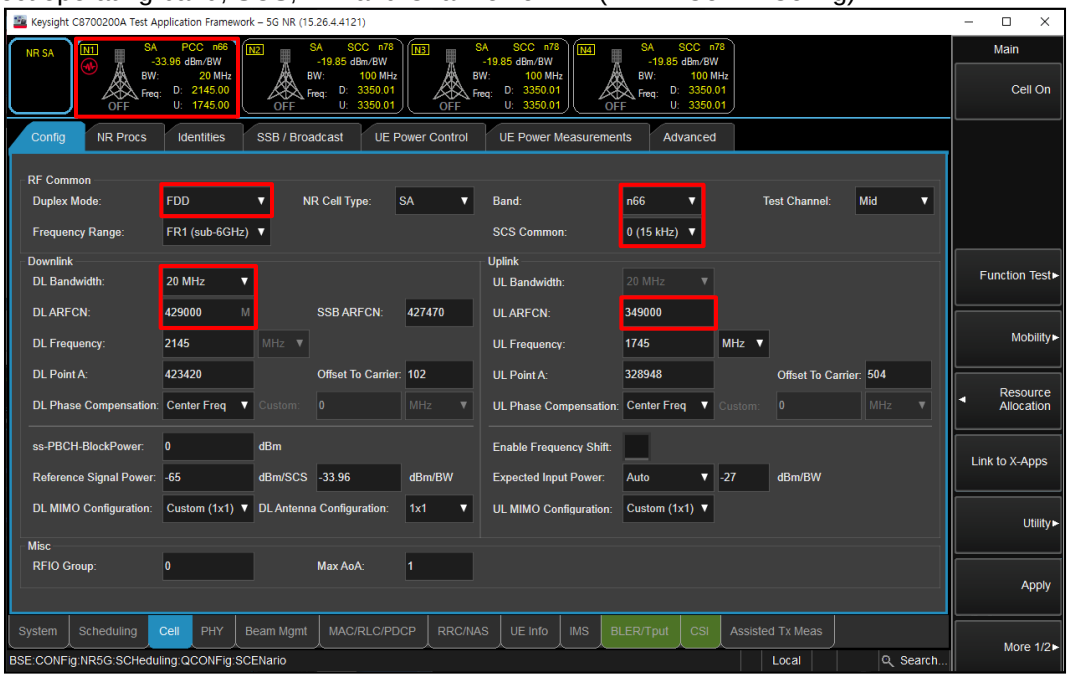
- Select “Channel Power” for LTE output power



(Figure 2-11)

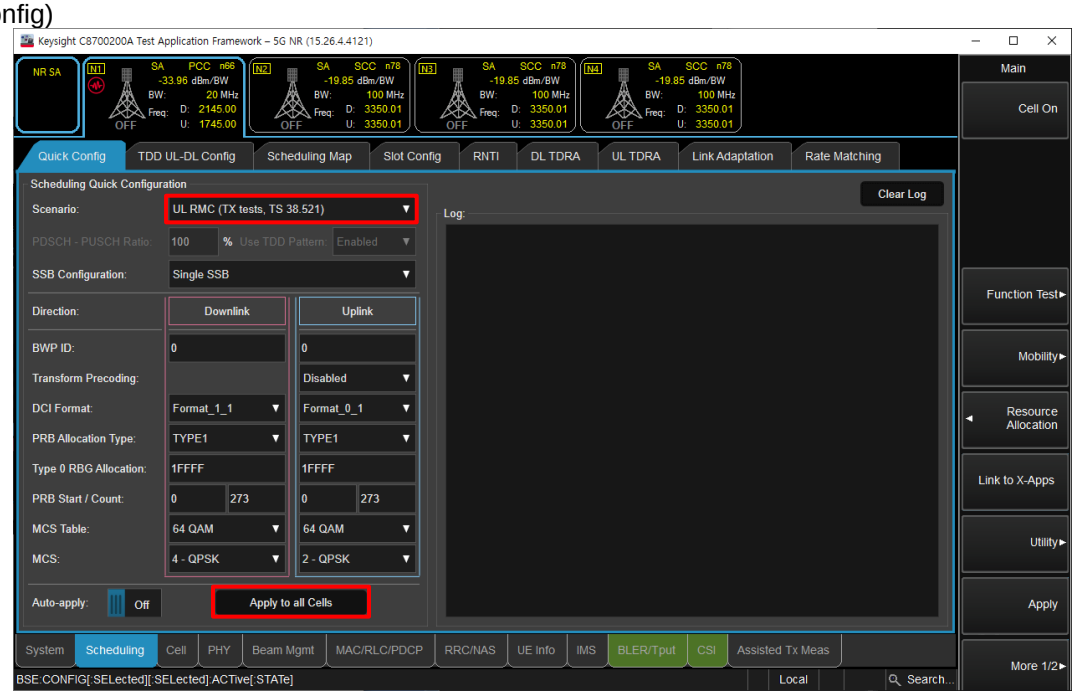
SA Mode

- Select operating band, SCS, BW and Channel for NR (NR -> Cell -> Config)



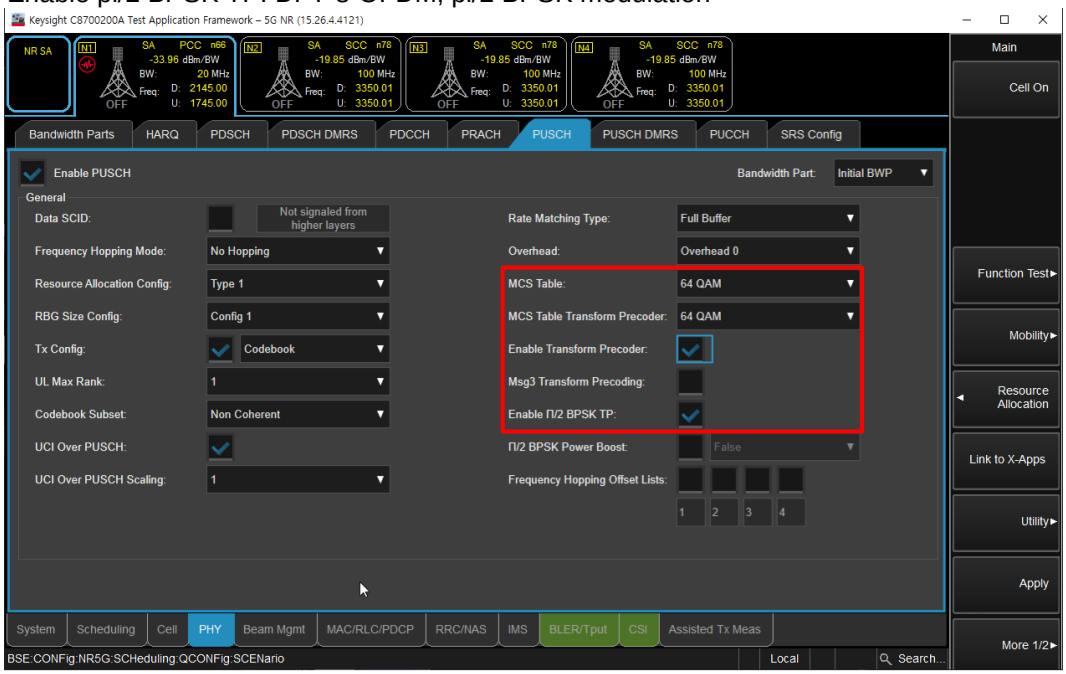
(Figure 3-1)

- Select "UL RMC (TX tests, TS 38.521)" for maximum power RB scheduling (NR -> Scheduling -> Quick Config)



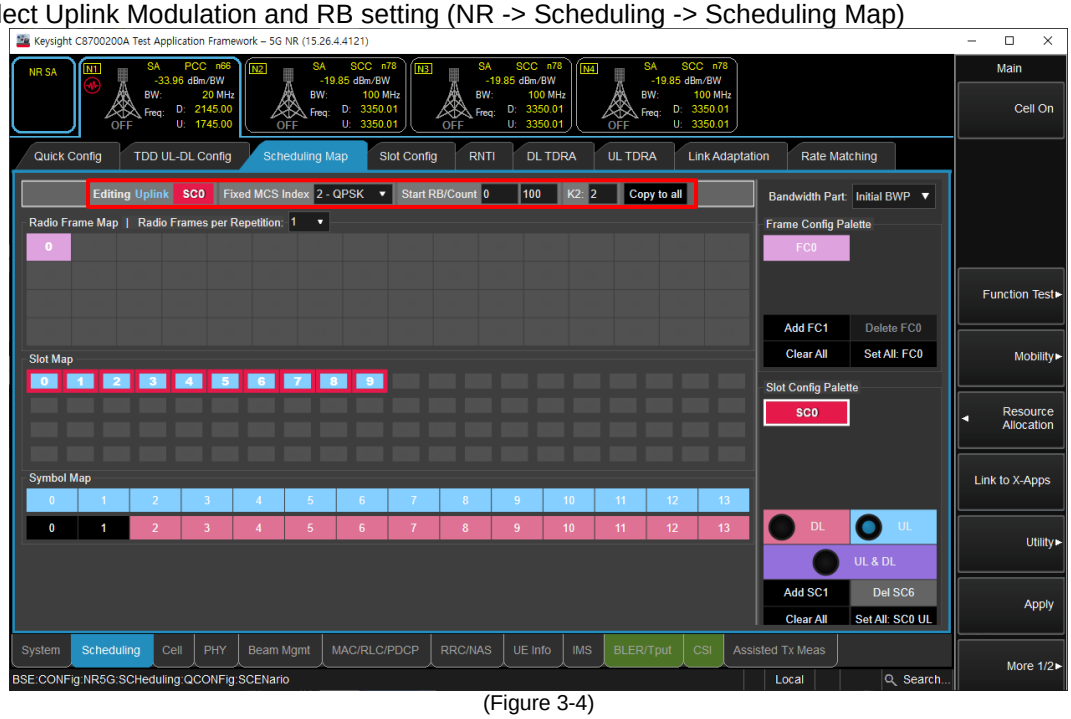
(Figure 3-2)

- To set waveform for NR Band (NR -> PHY -> PUSCH)
  - Select highest modulation in the MCS Table and MCS Table Transform Precoder
  - Enable Transform Precoder: DFT-s-OFDM / disable for CP-OFDM
  - Enable pi/2 BPSK TP: DFT-s-OFDM, pi/2 BPSK modulation



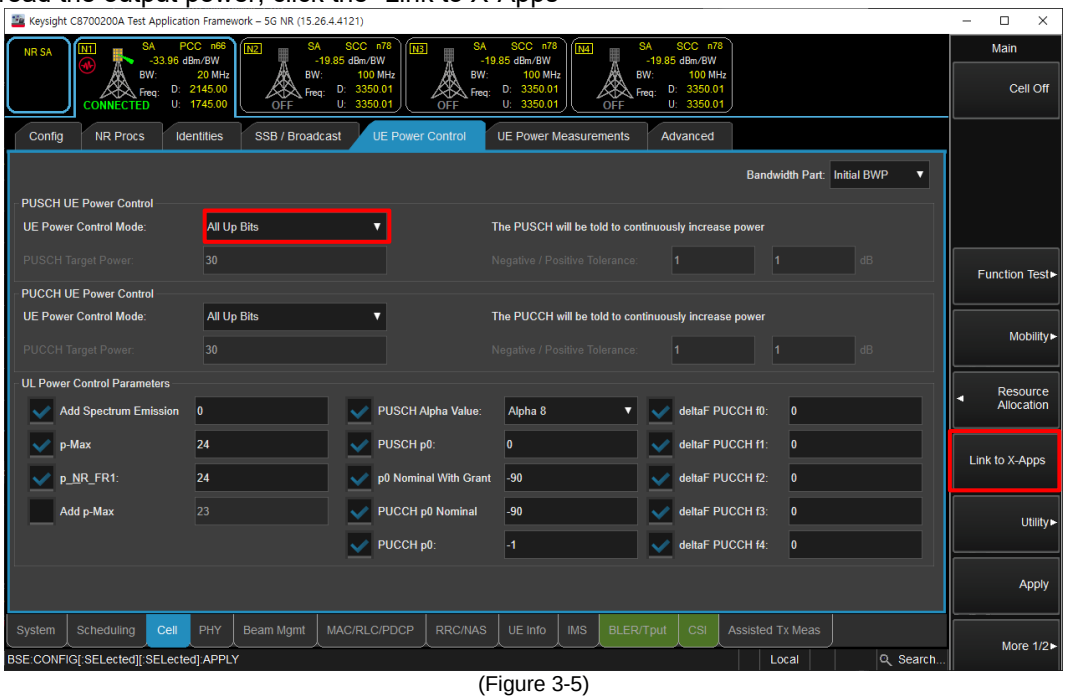
(Figure 3-3)

- Select Uplink Modulation and RB setting (NR -> Scheduling -> Scheduling Map)



(Figure 3-4)

- Click “Cell On” button in the right of Test application screen
- If necessary, turn the Airplane Mode on/off in the DUT
- Select “All Up Bits” of UL Power control Mode (Cell -> UE Power Control)
- To read the output power, click the “Link to X-Apps”



(Figure 3-5)

- Select “Channel Power”

(Figure 3-6)

1. Max power

NR Band n5 Measured Results

BW (MHz)	Modulation	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
					Measured Pwr (dBm)				
					166800	167300	167800		
					834 MHz	836.5 MHz	839 MHz		
20 MHz	DFT-s-OFDM	π/2 BPSK	1	1		23.66		0.0	24.00
			1	53		23.61		0.0	24.00
			1	104		23.67		0.0	24.00
			50	0		23.44		0.5	23.50
			50	28		23.65		0.0	24.00
			50	56		23.46		0.5	23.50
			100	0		23.49		0.5	23.50
		QPSK	1	1		23.63		0.0	24.00
			1	53		23.66		0.0	24.00
			1	104		23.61		0.0	24.00
			50	0		22.96		1.0	23.00
			50	28		23.98		0.0	24.00
			50	56		22.93		1.0	23.00
			100	0		22.94		1.0	23.00
		16QAM	1	1		22.62		1.0	23.00
			1	53		22.86		1.0	23.00
			1	104		22.68		1.0	23.00
		64QAM	1	1		21.44		2.5	21.50
		256QAM	1	1		18.99		4.5	19.50
	CP-OFDM	QPSK	1	1		22.47		1.5	22.50
BW (MHz)	Modulation	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
					166300	167300	168300		
					831.5 MHz	836.5 MHz	841.5 MHz		
15 MHz	DFT-s-OFDM	π/2 BPSK	1	1		23.43		0.0	24.00
			1	40		23.54		0.0	24.00
			1	77		23.56		0.0	24.00
			36	0		23.07		0.5	23.50
			36	22		23.66		0.0	24.00
			36	43		23.10		0.5	23.50
			75	0		23.19		0.5	23.50
		QPSK	1	1		23.59		0.0	24.00
			1	40		23.48		0.0	24.00
			1	77		23.55		0.0	24.00
			36	0		22.62		1.0	23.00
			36	22		23.65		0.0	24.00
			36	43		22.60		1.0	23.00
			75	0		22.67		1.0	23.00
		16QAM	1	1		22.41		1.0	23.00
		64QAM	1	1		21.24		2.5	21.50
		256QAM	1	1		18.76		4.5	19.50
	CP-OFDM	QPSK	1	1		21.84		1.5	22.50

NR Band n5 Measured Results (Continued)

BW (MHz)	Modulation	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
					165800	167300	168800		
					829 MHz	836.5 MHz	844 MHz		
10 MHz	DFT-s-OFDM	π/2 BPSK	1	1		23.37		0.0	24.00
			1	26		23.61		0.0	24.00
			1	50		23.60		0.0	24.00
			25	0		23.16		0.5	23.50
			25	14		23.72		0.0	24.00
			25	27		23.22		0.5	23.50
			50	0		23.26		0.5	23.50
		QPSK	1	1		23.43		0.0	24.00
			1	26		23.62		0.0	24.00
			1	50		23.61		0.0	24.00
			25	0		22.62		1.0	23.00
			25	14		23.76		0.0	24.00
			25	27		22.72		1.0	23.00
			50	0		22.75		1.0	23.00
		16QAM	1	1		22.43		1.0	23.00
		64QAM	1	1		21.28		2.5	21.50
		256QAM	1	1		18.77		4.5	19.50
	CP-OFDM	QPSK	1	1		21.87		1.5	22.50

BW (MHz)	Modulation	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
					165300	167300	169300		
					826.5 MHz	836.5 MHz	846.5 MHz		
5 MHz	DFT-s-OFDM	π/2 BPSK	1	1	23.42	23.42	23.68	0.0	24.00
			1	13	23.43	23.58	23.52	0.0	24.00
			1	23	23.47	23.67	23.54	0.0	24.00
			12	0	23.02	23.03	23.11	0.5	23.50
			12	7	23.52	23.02	23.57	0.0	24.00
			12	13	23.06	23.12	23.09	0.5	23.50
			25	0	23.19	23.18	23.10	0.5	23.50
		QPSK	1	1	23.61	23.45	23.58	0.0	24.00
			1	13	23.43	23.57	23.54	0.0	24.00
			1	23	23.44	23.63	23.64	0.0	24.00
			12	0	22.65	22.55	22.61	1.0	23.00
			12	7	23.53	23.62	23.58	0.0	24.00
			12	13	22.54	22.69	22.65	1.0	23.00
			25	0	22.58	22.75	22.60	1.0	23.00
		16QAM	1	1	22.71	22.76	22.52	1.0	23.00
		64QAM	1	1	21.41	21.42	21.44	2.5	21.50
		256QAM	1	1	18.84	18.81	18.85	4.5	19.50
	CP-OFDM	QPSK	1	1	21.98	22.06	22.01	1.5	22.50

NR Band n66 (Main 2. Ant) Measured Results

BW (MHz)	Modulation	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)				
					Measured Pwr (dBm)			MPR	Tune-up Limit
					344000	349000	354000		
					1720 MHz	1745 MHz	1770 MHz		
20 MHz	DFT-s-OFDM	π/2 BPSK	1	1	23.34	23.83	23.45	0.0	24.50
			1	53	23.34	23.74	23.41	0.0	24.50
			1	104	23.48	23.98	23.49	0.0	24.50
			50	0	22.93	23.53	23.05	0.5	24.00
			50	28	23.51	23.99	23.57	0.0	24.50
			50	56	23.05	23.49	23.11	0.5	24.00
			100	0	23.01	23.51	23.05	0.5	24.00
		QPSK	1	1	23.36	23.92	23.52	0.0	24.50
			1	53	23.32	23.84	23.49	0.0	24.50
			1	104	23.54	24.10	23.47	0.0	24.50
			50	0	22.48	22.86	22.47	1.0	23.50
			50	28	23.47	24.12	23.58	0.0	24.50
			50	56	22.53	23.02	22.62	1.0	23.50
			100	0	22.51	23.01	22.59	1.0	23.50
		16QAM	1	1	22.37	22.88	22.57	1.0	23.50
			1	53	22.31	22.84	22.44	1.0	23.50
			1	104	22.48	22.96	22.48	1.0	23.50
		64QAM	1	1	21.24	21.67	21.32	2.5	22.00
		256QAM	1	1	18.58	19.12	18.75	4.5	20.00
	CP-OFDM	QPSK	1	1	21.86	22.37	21.95	1.5	23.00
BW (MHz)	Modulation	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
					343500	349000	354500		
					1717.5 MHz	1745 MHz	1772.5 MHz		
15 MHz	DFT-s-OFDM	π/2 BPSK	1	1	23.20	23.75	23.20	0.0	24.50
			1	40	23.28	23.74	23.23	0.0	24.50
			1	77	23.45	23.86	23.42	0.0	24.50
			36	0	22.96	23.49	22.98	0.5	24.00
			36	22	23.38	23.86	23.41	0.0	24.50
			36	23	22.97	23.42	22.98	0.5	24.00
			75	0	22.95	23.32	23.08	0.5	24.00
		QPSK	1	1	23.30	23.83	23.39	0.0	24.50
			1	40	23.34	23.75	23.26	0.0	24.50
			1	77	23.77	23.94	23.55	0.0	24.50
			36	0	22.51	23.02	22.73	1.0	23.50
			36	22	23.50	24.01	23.42	0.0	24.50
			36	43	22.60	22.98	22.24	1.0	23.50
			75	0	22.31	23.01	22.42	1.0	23.50
		16QAM	1	1	22.33	22.85	22.34	1.0	23.50
		64QAM	1	1	21.13	21.68	21.15	2.5	22.00
		256QAM	1	1	18.75	19.05	18.91	4.5	20.00
	CP-OFDM	QPSK	1	1	22.23	22.34	21.73	1.5	23.00

NR Band n66 (Main 2. Ant) Measured Results (Continued)

BW (MHz)	Modulation	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
					343000	349000	355000		
					1715 MHz	1745 MHz	1775 MHz		
10 MHz	DFT-s-OFDM	π/2 BPSK	1	1	23.36	23.83	23.55	0.0	24.50
			1	26	23.42	23.84	23.46	0.0	24.50
			1	50	23.49	23.88	23.54	0.0	24.50
			25	0	23.03	23.53	23.07	0.5	24.00
			25	14	23.56	23.99	23.50	0.0	24.50
			25	27	23.04	23.43	23.00	0.5	24.00
			50	0	23.08	23.62	23.07	0.5	24.00
		QPSK	1	1	23.48	23.94	23.38	0.0	24.50
			1	26	23.52	23.91	23.50	0.0	24.50
			1	50	23.48	23.85	23.44	0.0	24.50
			25	0	22.50	23.00	22.49	1.0	23.50
			25	14	23.51	24.02	23.56	0.0	24.50
			25	27	22.30	23.00	22.54	1.0	23.50
			50	0	22.55	22.97	22.54	1.0	23.50
		16QAM	1	1	22.49	23.00	22.47	1.0	23.50
		64QAM	1	1	21.32	21.54	21.44	2.5	22.00
		256QAM	1	1	18.48	19.11	18.46	4.5	20.00
	CP-OFDM	QPSK	1	1	22.14	22.21	21.78	1.5	23.00

BW (MHz)	Modulation	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
					342500	349000	355500		
					1712.5 MHz	1745 MHz	1777.5 MHz		
5 MHz	DFT-s-OFDM	π/2 BPSK	1	1	23.44	23.82	23.44	0.0	24.50
			1	13	23.47	23.91	23.53	0.0	24.50
			1	23	23.49	23.87	23.56	0.0	24.50
			12	0	23.16	23.45	23.13	0.5	24.00
			12	7	23.58	23.92	23.71	0.0	24.50
			12	13	23.16	23.40	23.19	0.5	24.00
			25	0	23.22	23.45	23.69	0.5	24.00
		QPSK	1	1	23.60	23.78	23.72	0.0	24.50
			1	13	23.60	24.07	23.80	0.0	24.50
			1	23	23.61	23.92	23.70	0.0	24.50
			12	0	22.67	23.05	22.77	1.0	23.50
			12	7	23.64	24.05	23.80	0.0	24.50
			12	13	22.67	23.07	22.90	1.0	23.50
			25	0	22.70	23.07	22.78	1.0	23.50
		16QAM	1	1	22.54	23.02	22.70	1.0	23.50
		64QAM	1	1	21.43	21.85	21.46	2.5	22.00
		256QAM	1	1	18.61	19.17	18.56	4.5	20.00
	CP-OFDM	QPSK	1	1	22.04	22.25	21.98	1.5	23.00

NR Band n66 (Sub 1. Ant) Measured Results

BW (MHz)	Modulation	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)				
					Measured Pwr (dBm)			MPR	Tune-up Limit
					344000	349000	354000		
					1720 MHz	1745 MHz	1770 MHz		
20 MHz	DFT-s-OFDM	π/2 BPSK	1	1	22.99	22.89	22.96	0.0	24.00
			1	53	23.06	23.57	23.42	0.0	24.00
			1	104	23.21	23.14	22.84	0.0	24.00
			50	0	22.76	22.91	22.97	0.5	23.50
			50	28	23.24	23.60	23.56	0.0	24.00
			50	56	22.73	23.04	22.76	0.5	23.50
			100	0	22.56	22.92	22.93	0.5	23.50
		QPSK	1	1	23.09	22.92	22.98	0.0	24.00
			1	53	23.01	23.53	23.36	0.0	24.00
			1	104	23.13	23.17	22.83	0.0	24.00
			50	0	22.21	22.56	22.38	1.0	23.00
			50	28	23.28	23.61	23.59	0.0	24.00
			50	56	22.02	22.51	22.32	1.0	23.00
			100	0	22.12	22.41	22.36	1.0	23.00
		16QAM	1	1	22.13	21.98	22.09	1.0	23.00
			1	53	22.07	22.64	22.48	1.0	23.00
			1	104	22.23	22.26	21.83	1.0	23.00
		64QAM	1	1	20.89	20.82	21.26	2.5	21.50
		256QAM	1	1	18.88	18.93	18.63	4.5	19.50
	CP-OFDM	QPSK	1	1	21.29	21.27	21.47	1.5	22.50
BW (MHz)	Modulation	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
					343500	349000	354500		
					1717.5 MHz	1745 MHz	1772.5 MHz		
15 MHz	DFT-s-OFDM	π/2 BPSK	1	1	22.98	22.87	22.93	0.0	24.00
			1	40	23.05	23.55	23.39	0.0	24.00
			1	77	23.20	23.12	22.81	0.0	24.00
			36	0	22.75	22.89	22.94	0.5	23.50
			36	22	23.23	23.58	23.53	0.0	24.00
			36	43	22.72	23.02	22.73	0.5	23.50
			75	0	22.55	22.90	22.90	0.5	23.50
		QPSK	1	1	23.08	22.90	22.95	0.0	24.00
			1	40	23.00	23.51	23.33	0.0	24.00
			1	77	23.12	23.15	22.80	0.0	24.00
			36	0	22.20	22.54	22.35	1.0	23.00
			36	22	23.27	23.59	23.56	0.0	24.00
			36	43	22.01	22.49	22.29	1.0	23.00
			75	0	22.11	22.39	22.33	1.0	23.00
		16QAM	1	1	22.12	21.96	22.06	1.0	23.00
		64QAM	1	1	20.88	20.80	21.23	2.5	21.50
		256QAM	1	1	18.87	18.91	18.60	4.5	19.50
	CP-OFDM	QPSK	1	1	21.28	21.25	21.44	1.5	22.50

NR Band n66 (Sub 1. Ant) Measured Results

BW (MHz)	Modulation	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
					343000	349000	355000		
					1715 MHz	1745 MHz	1775 MHz		
10 MHz	DFT-s-OFDM	π/2 BPSK	1	1	22.91	22.86	22.90	0.0	24.00
			1	26	22.98	23.56	23.38	0.0	24.00
			1	50	23.13	23.13	22.80	0.0	24.00
			25	0	22.68	22.90	22.93	0.5	23.50
			25	14	23.16	23.59	23.52	0.0	24.00
			25	27	22.65	23.03	22.72	0.5	23.50
			50	0	22.48	22.91	22.89	0.5	23.50
		QPSK	1	1	23.01	22.91	22.94	0.0	24.00
			1	26	22.93	23.52	23.32	0.0	24.00
			1	50	23.05	23.16	22.79	0.0	24.00
			25	0	22.13	22.55	22.34	1.0	23.00
			25	14	23.20	23.60	23.55	0.0	24.00
			25	27	21.94	22.50	22.28	1.0	23.00
			50	0	22.04	22.40	22.32	1.0	23.00
		16QAM	1	1	22.05	21.97	22.05	1.0	23.00
		64QAM	1	1	20.81	20.81	21.22	2.5	21.50
		256QAM	1	1	18.80	18.92	18.59	4.5	19.50
	CP-OFDM	QPSK	1	1	21.18	21.19	21.29	1.5	22.50

BW (MHz)	Modulation	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
					342500	349000	355500		
					1712.5 MHz	1745 MHz	1777.5 MHz		
5 MHz	DFT-s-OFDM	π/2 BPSK	1	1	22.96	22.88	22.92	0.0	24.00
			1	13	23.03	23.56	23.38	0.0	24.00
			1	23	23.18	23.13	22.80	0.0	24.00
			12	0	22.73	22.90	22.93	0.5	23.50
			12	7	23.21	23.59	23.52	0.0	24.00
			12	13	22.70	23.03	22.72	0.5	23.50
			25	0	22.53	22.91	22.89	0.5	23.50
		QPSK	1	1	23.06	22.91	22.94	0.0	24.00
			1	13	22.98	23.52	23.32	0.0	24.00
			1	23	23.10	23.16	22.79	0.0	24.00
			12	0	22.18	22.55	22.34	1.0	23.00
			12	7	23.25	23.60	23.55	0.0	24.00
			12	13	21.99	22.50	22.28	1.0	23.00
			25	0	22.09	22.40	22.32	1.0	23.00
		16QAM	1	1	22.10	21.97	22.05	1.0	23.00
		64QAM	1	1	20.86	20.81	21.22	2.5	21.50
		256QAM	1	1	18.85	18.92	18.59	4.5	19.50
	CP-OFDM	QPSK	1	1	21.26	21.26	21.43	1.5	22.50

2. Reduced power

NR Band n66 (Sub1. Ant) Measured Results

BW (MHz)	Modulation	Mode	RB Allocation	RB offset	Reduced Average Power (dBm) Hotspot back-off					Reduced Average Power (dBm) RCV back-off				
					Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
					344000	349000	354000			344000	349000	354000		
					1720 MHz	1745 MHz	1770 MHz			1720 MHz	1745 MHz	1770 MHz		
20 MHz	DFT-s-OFDM	π/2 BPSK	1	1	20.82	20.98	21.05	0.0	22.00	16.90	17.11	17.11	0.0	18.00
			1	53	20.87	21.65	21.44	0.0	22.00	16.84	17.63	17.62	0.0	18.00
			1	104	20.99	21.29	20.81	0.0	22.00	16.96	17.22	17.02	0.0	18.00
			50	0	21.05	21.50	21.44	0.0	22.00	16.94	17.48	17.57	0.0	18.00
			50	28	21.03	21.66	21.57	0.0	22.00	17.03	17.64	17.72	0.0	18.00
			50	56	21.07	21.48	21.29	0.0	22.00	17.00	17.59	17.47	0.0	18.00
			100	0	21.07	21.40	21.43	0.0	22.00	16.98	17.47	17.48	0.0	18.00
		QPSK	1	1	20.94	20.86	21.12	0.0	22.00	16.82	17.02	17.13	0.0	18.00
			1	53	20.95	21.49	21.47	0.0	22.00	16.80	17.64	17.63	0.0	18.00
			1	104	21.07	21.11	20.82	0.0	22.00	16.91	17.26	16.99	0.0	18.00
			50	0	20.99	21.31	21.38	0.0	22.00	16.85	17.47	17.62	0.0	18.00
			50	28	21.05	21.53	21.52	0.0	22.00	16.92	17.72	17.71	0.0	18.00
			50	56	21.05	21.42	21.28	0.0	22.00	16.97	17.60	17.48	0.0	18.00
			100	0	21.07	21.39	21.39	0.0	22.00	16.98	17.57	17.54	0.0	18.00
		16QAM	1	1	21.02	20.91	21.17	0.0	22.00	16.90	17.04	17.27	0.0	18.00
			1	53	20.99	21.56	21.48	0.0	22.00	16.89	17.64	17.61	0.0	18.00
			1	104	21.11	21.17	20.88	0.0	22.00	16.98	17.18	16.99	0.0	18.00
		64QAM	1	1	20.84	20.75	20.99	0.5	21.50	17.20	17.42	17.60	0.0	18.00
		256QAM	1	1	18.61	18.37	18.76	2.5	19.50	17.01	17.21	17.51	0.0	18.00
	CP-OFDM	QPSK	1	1	20.79	20.76	20.91	0.0	22.00	16.74	17.11	17.24	0.0	18.00
BW (MHz)	Modulation	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
					343500	349000	354500			343500	349000	354500		
					1717.5 MHz	1745 MHz	1772.5 MHz			1717.5 MHz	1745 MHz	1772.5 MHz		
15 MHz	DFT-s-OFDM	π/2 BPSK	1	1	20.87	20.85	21.01	0.0	22.00	16.78	17.06	17.04	0.0	18.00
			1	40	20.92	21.52	21.40	0.0	22.00	16.72	17.58	17.55	0.0	18.00
			1	77	21.04	21.16	20.77	0.0	22.00	16.84	17.17	16.95	0.0	18.00
			36	0	21.10	21.37	21.40	0.0	22.00	16.82	17.43	17.50	0.0	18.00
			36	22	21.08	21.53	21.53	0.0	22.00	16.91	17.59	17.65	0.0	18.00
			36	43	21.12	21.35	21.25	0.0	22.00	16.88	17.54	17.40	0.0	18.00
			75	0	21.12	21.27	21.39	0.0	22.00	16.86	17.42	17.41	0.0	18.00
		QPSK	1	1	20.99	20.73	21.08	0.0	22.00	16.70	16.97	17.06	0.0	18.00
			1	40	21.00	21.36	21.43	0.0	22.00	16.68	17.59	17.56	0.0	18.00
			1	77	21.12	20.98	20.78	0.0	22.00	16.79	17.21	16.92	0.0	18.00
			36	0	21.04	21.18	21.34	0.0	22.00	16.73	17.42	17.55	0.0	18.00
			36	22	21.10	21.40	21.48	0.0	22.00	16.80	17.67	17.64	0.0	18.00
			36	43	21.10	21.29	21.24	0.0	22.00	16.85	17.55	17.41	0.0	18.00
			75	0	21.12	21.26	21.35	0.0	22.00	16.86	17.52	17.47	0.0	18.00
		16QAM	1	1	21.16	21.04	20.84	0.0	22.00	16.86	17.13	16.92	0.0	18.00
		64QAM	1	1	20.89	20.62	20.95	0.5	21.50	17.08	17.37	17.53	0.0	18.00
		256QAM	1	1	18.92	18.24	18.72	2.5	19.50	16.89	17.16	17.44	0.0	18.00
	CP-OFDM	QPSK	1	1	20.84	20.63	20.87	0.0	22.00	16.62	16.96	17.17	0.0	18.00

NR Band n66 (Sub1. Ant) Measured Results

BW (MHz)	Modulation	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
					343000	349000	355000			343000	349000	355000		
					1715 MHz	1745 MHz	1775 MHz			1715 MHz	1745 MHz	1775 MHz		
10 MHz	DFT-s-OFDM	π/2 BPSK	1	1	20.82	20.86	20.97	0.0	22.00	16.81	17.00	17.00	0.0	18.00
			1	26	20.87	21.53	21.36	0.0	22.00	16.75	17.52	17.51	0.0	18.00
			1	50	20.99	21.17	20.73	0.0	22.00	16.87	17.11	16.91	0.0	18.00
			25	0	21.05	21.38	21.36	0.0	22.00	16.85	17.37	17.46	0.0	18.00
			25	14	21.03	21.54	21.49	0.0	22.00	16.94	17.53	17.61	0.0	18.00
			25	27	21.07	21.36	21.21	0.0	22.00	16.91	17.48	17.36	0.0	18.00
			50	0	21.07	21.28	21.35	0.0	22.00	16.89	17.36	17.37	0.0	18.00
		QPSK	1	1	20.94	20.74	21.04	0.0	22.00	16.73	16.91	17.02	0.0	18.00
			1	26	20.95	21.37	21.39	0.0	22.00	16.71	17.53	17.52	0.0	18.00
			1	50	21.07	20.99	20.74	0.0	22.00	16.82	17.15	16.88	0.0	18.00
			25	0	20.99	21.19	21.30	0.0	22.00	16.76	17.36	17.51	0.0	18.00
			25	14	21.05	21.41	21.44	0.0	22.00	16.83	17.61	17.60	0.0	18.00
			25	27	21.05	21.30	21.20	0.0	22.00	16.88	17.49	17.37	0.0	18.00
			50	0	21.07	21.27	21.31	0.0	22.00	16.89	17.46	17.43	0.0	18.00
		16QAM	1	1	21.11	21.05	20.80	0.0	22.00	16.89	17.07	16.88	0.0	18.00
		64QAM	1	1	20.84	20.63	20.91	0.5	21.50	17.11	17.31	17.49	0.0	18.00
		256QAM	1	1	18.87	18.25	18.68	2.5	19.50	16.92	17.10	17.40	0.0	18.00
	CP-OFDM	QPSK	1	1	20.79	20.64	20.83	0.0	22.00	16.65	16.90	17.13	0.0	18.00

BW (MHz)	Modulation	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
					342500	349000	355500			342500	349000	355500		
					1712.5 MHz	1745 MHz	1777.5 MHz			1712.5 MHz	1745 MHz	1777.5 MHz		
5 MHz	DFT-s-OFDM	π/2 BPSK	1	1	20.74	20.91	20.92	0.0	22.00	16.82	17.01	17.05	0.0	18.00
			1	13	20.79	21.58	21.31	0.0	22.00	16.76	17.53	17.56	0.0	18.00
			1	23	20.91	21.22	20.68	0.0	22.00	16.88	17.12	16.96	0.0	18.00
			12	0	20.97	21.43	21.31	0.0	22.00	16.86	17.38	17.51	0.0	18.00
			12	7	20.95	21.59	21.44	0.0	22.00	16.95	17.54	17.66	0.0	18.00
			12	13	20.99	21.41	21.16	0.0	22.00	16.92	17.49	17.41	0.0	18.00
			25	0	20.99	21.33	21.30	0.0	22.00	16.90	17.37	17.42	0.0	18.00
		QPSK	1	1	20.86	20.79	20.99	0.0	22.00	16.74	16.92	17.07	0.0	18.00
			1	13	20.87	21.42	21.34	0.0	22.00	16.72	17.54	17.57	0.0	18.00
			1	23	20.99	21.04	20.69	0.0	22.00	16.83	17.16	16.93	0.0	18.00
			12	0	20.91	21.24	21.25	0.0	22.00	16.77	17.37	17.56	0.0	18.00
			12	7	20.97	21.46	21.39	0.0	22.00	16.84	17.62	17.65	0.0	18.00
			12	13	20.97	21.35	21.15	0.0	22.00	16.89	17.50	17.42	0.0	18.00
			25	0	20.99	21.32	21.26	0.0	22.00	16.90	17.47	17.48	0.0	18.00
		16QAM	1	1	21.03	21.10	20.75	0.0	22.00	16.90	17.08	16.93	0.0	18.00
		64QAM	1	1	20.76	20.68	20.86	0.5	21.50	17.12	17.32	17.54	0.0	18.00
		256QAM	1	1	18.53	18.30	18.63	2.5	19.50	16.93	17.11	17.45	0.0	18.00
	CP-OFDM	QPSK	1	1	20.71	20.69	20.78	0.0	22.00	16.66	16.91	17.18	0.0	18.00

9.5. Wi-Fi 2.4 GHz (DTS Band)

WLAN output power results

Antenna	Mode	Data Rate	Ch #	Freq. (MHz)	WLAN mode power					
					Max.Average Power			Reduced Average Power		
					Meas. Avg Pwr (dBm)	Max. Tune-up Limit (dBm)	SAR Test (Yes/No)	Meas. Avg Pwr (dBm)	Max. Tune-up Limit (dBm)	SAR Test (Yes/No)
WiFi 2.4G Ant	802.11b	1 Mbps	1	2412.0	17.64	18.50	Yes	11.11	12.00	Yes
			6	2437.0	19.23	20.00		11.33		
			11	2462.0	13.94	14.50		11.66		
			12	2467.0	7.54	8.00	No	7.59	8.00	No
			13	2472.0	7.33	8.00		7.39	8.00	
	802.11g	6 Mbps	1	2412.0	Not Required	18.00	No	Not Required	12.00	No
			6	2437.0						
			11	2462.0		17.00				
			12	2467.0		6.00	No		6.00	No
			13	2472.0		6.00			6.00	
	802.11n	MCS 0	1	2412.0	Not Required	17.50	No	Not Required	12.00	No
			6	2437.0		18.00				
			11	2462.0		16.50				
			12	2467.0		6.00	No		6.00	No
			13	2472.0		5.50			6.00	

Note(s):

1. SAR is not required for 802.11g/n modes when the adjusted SAR for 802.11b is < 1.2 W/kg.
2. For "Not required", SAR Test reduction was applied from KDB 248227 guidance, Sec. 2.1, b), 1) when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11n/g mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band. Additional output power measurements were not deemed necessary.
3. Additionally, SAR is not required for Channels 12 and 13 because the measured output power for these two channels are no greater than those for the default test channels. Refer to §6.3.

9.6. Wi-Fi 5GHz (U-NII Bands)

WLAN output power Results

Antenna	Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	WLAN mode power					
						Max. Average Power			Reduced Average Power		
						Avg Pwr (dBm)	Max. Tune-up Limit (dBm)	SAR Test (Yes/No)	Avg Pwr (dBm)	Max. Tune-up Limit (dBm)	SAR Test (Yes/No)
5GHz Ant	5.3 (UNII 2A)	802.11a	6 Mbps	52	5260	15.51	16.00	Yes	Not Required	11.00	No
				56	5280	15.49					
				60	5300	15.40					
				64	5320	15.46					
		802.11n (HT20)	6.5 Mbps	Not Required			15.00	No	Not Required	11.00	No
		802.11n (HT40)	13.5 Mbps	Not Required			14.00	No	Not Required	11.00	No
		802.11ac (VHT20)	6.5 Mbps	Not Required			15.00	No	Not Required	11.00	No
		802.11ac (VHT40)	13.5 Mbps	Not Required			14.00	No	Not Required	11.00	No
		802.11ac (VHT80)	29.3 Mbps	58	5290.0	Not Required	13.00	No	10.08	11.00	Yes
	5.5 (U-NII 2C)	802.11a	6 Mbps	100	5500	15.45	16.00	Yes	Not Required	11.00	No
				120	5600	15.35					
				124	5620	15.52					
				144	5720	15.32					
		802.11n (HT20)	6.5 Mbps	Not Required			15.00	No	Not Required	11.00	No
		802.11n (HT40)	13.5 Mbps	Not Required			14.00	No	Not Required	11.00	No
		802.11ac (VHT20)	6.5 Mbps	Not Required			15.00	No	Not Required	11.00	No
		802.11ac (VHT40)	13.5 Mbps	Not Required			14.00	No	Not Required	11.00	No
		802.11ac (VHT80)	29.3 Mbps	106	5530.0	Not Required	13.00	No	10.59	11.00	Yes
				122	5610.0	Not Required			10.55		
				138	5690.0	Not Required			10.47		
	5.8 (UNII 3)	802.11a	6 Mbps	149	5745	15.29	16.00	Yes	Not Required	11.00	No
				157	5785	15.64					
				165	5825	15.34					
		802.11n (HT20)	6.5 Mbps	Not Required			15.00	No	Not Required	11.00	No
		802.11n (HT40)	13.5 Mbps	Not Required			14.00	No	Not Required	11.00	No
		802.11ac (VHT20)	6.5 Mbps	Not Required			15.00	No	Not Required	11.00	No
		802.11ac (VHT40)	13.5 Mbps	Not Required			14.00	No	Not Required	11.00	No
		802.11ac (VHT80)	29.3 Mbps	155	5775.0	Not Required	13.00	No	10.39	11.00	Yes

Note(s):

1. For "Not required", SAR Test reduction was applied from KDB 248227 guidance, Sec. 2.1, b), 1) when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band.
2. When the same transmission mode configurations have the same maximum output power on the same channel for the 802.11 a/g/n/ac modes, the channel in the lower order/sequence 802.11 mode (i.e. a, g, n, ac) is selected.
3. When the specified maximum output power is the same for both UNII band I and UNII band 2A, begin SAR measurement in UNII band 2A; and if the highest *reported* SAR for UNII band 2A is
   - ≤ 1.2 W/kg, SAR is not required for UNII band I
   - > 1.2 W/kg, both bands should be tested independently for SAR.

9.7. Bluetooth

Bluetooth Measured Results

Band (GHz)	Mode	Ch #	Freq. (MHz)	Maximum Average Power (dBm)	
				Meas Pwr	Tune-up Limit
2.4	GFSK	0	2402	17.16	18.00
		39	2441	16.91	
		78	2480	17.40	
	EDR 8-DPSK	0	2402	12.17	13.50
		39	2441	12.04	
		78	2480	12.89	
	LE GFSK, 1M (37 pkt)	0	2402	6.23	8.50
		19	2440	7.49	
		39	2480	8.23	
	LE GFSK, 2M (37 pkt)	0	2402	6.03	
		19	2440	7.30	
		39	2480	8.06	

Note(s):

For All exposure conditions, SAR test is evaluated at GFSK mode in Bluetooth using maximum power condition.

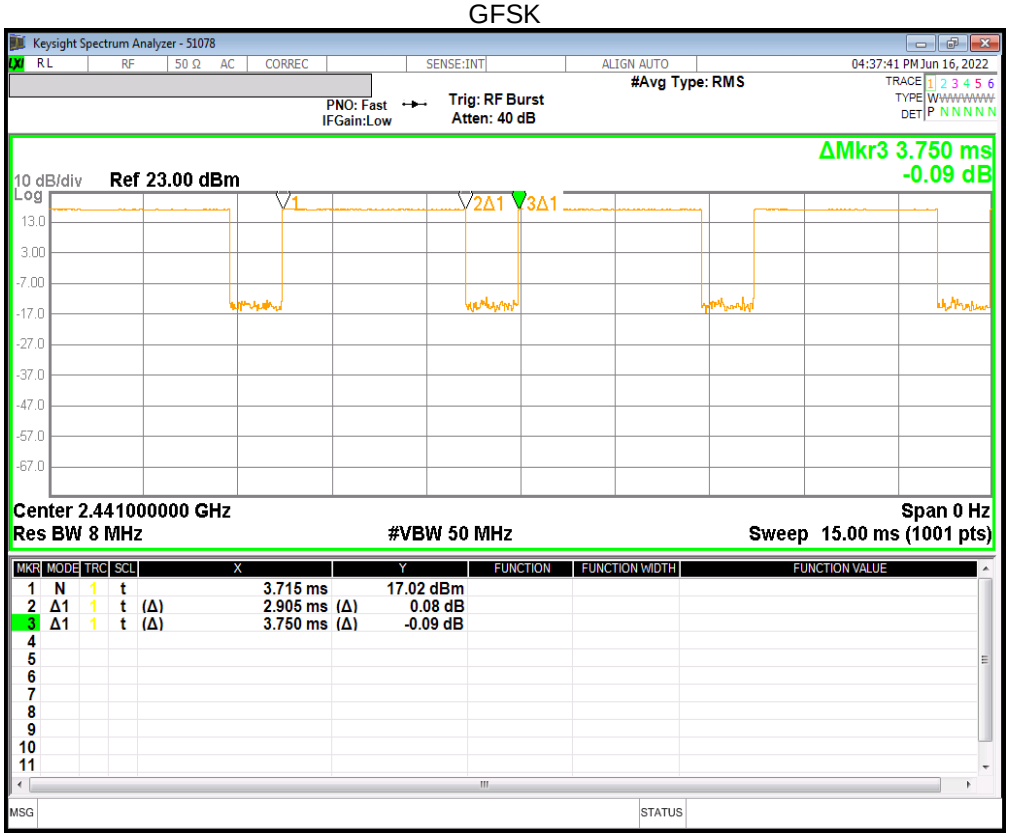
Bluetooth_(Continued)

Duty Factor Measured Results

Mode	Type	T on (ms)	Period (ms)	Duty Cycle	Crest Factor (1/duty cycle)
GFSK	DH5	2.905	3.750	77.5%	1.29

Duty Cycle plots

GFSK



10. Measured and Reported (Scaled) SAR Results

SAR Test Reduction criteria are as follows:

- Reported SAR(W/kg) for WWAN= Measured SAR *Tune-up Scaling Factor
- Reported SAR(W/kg) for Wi-Fi and Bluetooth= Measured SAR * Tune-up scaling factor * Duty Cycle scaling factor
- Duty Cycle scaling factor = 1 / Duty cycle (%)

KDB 447498 D01 General RF Exposure Guidance:

Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:

- ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
- ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
- ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz

KDB 648474 D04 Handset SAR:

With headset attached, when the reported SAR for body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

KDB 648474 D04 Handset SAR (Phablet Only):

For smart phones, with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm.
When hotspot mode does not apply, 10-g extremity SAR is required for all surfaces and edges with an antenna located at ≤ 25mm From that surface or edge in direct contact with a flat phantom, to address interactive hand use exposure conditions. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; However, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, Including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.

Additional 1-g SAR testing at 5 mm is not required when hotspot mode 10-g extremity SAR is not required for the surfaces and edges; since all 1-g reported SAR < 1.2 W/kg.

KDB 941225 D01 SAR test for 3G devices:

When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

KDB 941225 D05 SAR for LTE Devices:

SAR test reduction is applied using the following criteria:

- Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB, and 50% RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel.
- When the reported SAR is > 0.8 W/kg, testing for other Channels is performed at the highest output power level for 1RB, and 50% RB configuration for that channel.
- Testing for 100% RB configuration is performed at the highest output power level for 100% RB configuration across the Low, Mid and High Channel when the highest reported SAR for 1 RB and 50% RB are > 0.8 W/kg. Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation < 1.45 W/kg.
- Testing for 16-QAM modulation is not required because the reported SAR for QPSK is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of QPSK.
- Testing for the other channel bandwidths is not required because the reported SAR for the highest channel bandwidth is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of the highest channel bandwidth.
- For LTE bands that do not support at least three non-overlapping channels in certain channel bandwidths, test the available non-overlapping channels instead. When a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing; therefore, the requirement for H, M and L channels may not fully apply.

KDB 248227 D01 SAR meas for 802.11:

SAR test reduction for 802.11 Wi-Fi transmission mode configurations are considered separately for DSSS and OFDM. An initial test position is determined to reduce the number of tests required for certain exposure configurations with multiple test positions. An initial test configuration is determined for each frequency band and aggregated band according to maximum output power, channel bandwidth, wireless mode configurations and other operating parameters to streamline the measurement requirements. For 2.4 GHz DSSS, either the initial test position or DSSS procedure is applied to reduce the number of SAR tests; these are mutually exclusive. For OFDM, an initial test position is only applicable to next to the ear, UMPC mini-tablet and hotspot mode configurations, which is tested using the initial test configuration to facilitate test reduction. For other exposure conditions with a fixed test position, SAR test reduction is determined using only the initial test configuration.

The multiple test positions require SAR measurements in head, hotspot mode or UMPC mini-tablet configurations may be reduced according to the highest reported SAR determined using the *initial test position(s)* by applying the DSSS or OFDM SAR measurement procedures in the required wireless mode test configuration(s). The *initial test position(s)* is measured using the highest measured maximum output power channel in the required wireless mode test configuration(s). When the *reported* SAR for the *initial test position* is:

- ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and wireless mode combination within the frequency band or aggregated band. DSSS and OFDM configurations are considered separately according to the required SAR procedures.
- > 0.4 W/kg, SAR is repeated using the same wireless mode test configuration tested in the *initial test position* to measure the subsequent next closet/smallest test separation distance and maximum coupling test position, on the highest maximum output power channel, until the *reported* SAR is ≤ 0.8 W/kg or all required test positions are tested.
  - For subsequent test positions with equivalent test separation distance or when exposure is dominated by coupling conditions, the position for maximum coupling condition should be tested.
  - When it is unclear, all equivalent conditions must be tested.
- For all positions/configurations tested using the *initial test position* and subsequent test positions, when the *reported* SAR is > 0.8 W/kg, measure the SAR for these positions/configurations on the subsequent next highest measured output power channel(s) until the *reported* SAR is ≤ 1.2 W/kg or all required test channels are considered.
  - The additional power measurements required for this step should be limited to those necessary for identifying subsequent highest output power channels to apply the test reduction.
- When the specified maximum output power is the same for both UNII 1 and UNII 2A, begin SAR measurements in UNII 2A with the channel with the highest measured output power. If the reported SAR for UNII 2A is ≤ 1.2 W/kg, SAR is not required for UNII 1; otherwise treat the remaining bands separately and test them independently for SAR.
- When the specified maximum output power is different between UNII 1 and UNII 2A, begin SAR with the band that has the higher specified maximum output. If the highest reported SAR for the band with the highest specified power is ≤ 1.2 W/kg, testing for the band with the lower specified output power is not required; otherwise test the remaining bands independently for SAR.

To determine the *initial test position*, Area Scans were performed to determine the position with the *Maximum Value of SAR (measured)*. The position that produced the highest *Maximum Value of SAR* is considered the worst case position; thus used as the *initial test position*.

10.1. GSM 850

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Main 1 Ant.	Head	GPRS 2 Slots	N/A	0	Left Touch	251	848.8	32.00	31.76	0.272	0.287	
					Left Tilt	251	848.8	32.00	31.76	0.148	0.156	
					Right Touch	251	848.8	32.00	31.76	0.340	0.359	1
					Right Tilt	251	848.8	32.00	31.76	0.172	0.182	
	Body-worn	GPRS 2 Slots	N/A	15	Rear	251	848.8	32.00	31.76	0.480	0.507	2
					Front	251	848.8	32.00	31.76	0.234	0.247	
	Hotspot	GPRS 2 Slots	N/A	10	Rear	128	824.4	32.00	31.00	0.749	0.943	
						190	836.6	32.00	31.40	0.953	1.094	3
						251	848.8	32.00	31.76	0.947	1.001	
					Front	251	848.8	32.00	31.76	0.236	0.249	
					Edge 2	251	848.8	32.00	31.76	0.328	0.347	
					Edge 3	251	848.8	32.00	31.76	0.494	0.522	
					Edge 4	251	848.8	32.00	31.76	0.150	0.159	

10.2. GSM 1900

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Main 2 Ant.	Head	GPRS 3 Slots	Off	0	Left Touch	661	1880.0	27.00	26.01	0.115	0.144	4
					Left Tilt	661	1880.0	27.00	26.01	0.088	0.111	
					Right Touch	661	1880.0	27.00	26.01	0.101	0.127	
					Right Tilt	661	1880.0	27.00	26.01	0.074	0.093	
	Body-worn	GPRS 3 Slots	Off	15	Rear	661	1880.0	27.00	26.01	0.237	0.298	5
					Front	661	1880.0	27.00	26.01	0.187	0.235	
	Hotspot	GPRS 3 Slots	On	10	Rear	661	1880.0	25.50	24.66	0.313	0.380	6
					Front	661	1880.0	25.50	24.66	0.272	0.330	
					Edge 3	661	1880.0	25.50	24.66	0.288	0.349	
					Edge 4	661	1880.0	25.50	24.66	0.161	0.195	

10.3. WCDMA Band II

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Main 2 Ant.	Head	Rel 99 RMC	Off	0	Left Touch	9400	1880.0	25.00	23.43	0.196	0.281	7
					Left Tilt	9400	1880.0	25.00	23.43	0.124	0.178	
					Right Touch	9400	1880.0	25.00	23.43	0.158	0.227	
					Rightt Tilt	9400	1880.0	25.00	23.43	0.092	0.132	
	Body-worn	Rel 99 RMC	Off	15	Rear	9400	1880.0	25.00	23.43	0.352	0.505	8
					Front	9400	1880.0	25.00	23.43	0.310	0.445	
	Hotspot	Rel 99 RMC	On	10	Rear	9400	1880.0	22.00	20.43	0.330	0.474	9
					Front	9400	1880.0	22.00	20.43	0.192	0.276	
					Edge 3	9400	1880.0	22.00	20.43	0.295	0.423	
					Edge 4	9400	1880.0	22.00	20.43	0.157	0.225	

10.4. WCDMA Band IV

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Main 2 Ant.	Head	Rel 99 RMC	Off	0	Left Touch	1413	1732.6	25.00	23.51	0.133	0.187	
					Left Tilt	1413	1732.6	25.00	23.51	0.098	0.138	
					Right Touch	1413	1732.6	25.00	23.51	0.150	0.211	10
					Rightt Tilt	1413	1732.6	25.00	23.51	0.087	0.123	
	Body-worn	Rel 99 RMC	Off	15	Rear	1413	1732.6	25.00	23.51	0.345	0.486	11
					Front	1413	1732.6	25.00	23.51	0.298	0.420	
	Hotspot	Rel 99 RMC	On	10	Rear	1413	1732.6	22.00	20.96	0.336	0.427	12
					Front	1413	1732.6	22.00	20.96	0.305	0.388	
					Edge 3	1413	1732.6	22.00	20.96	0.336	0.427	
					Edge 4	1413	1732.6	22.00	20.96	0.198	0.252	

10.5. WCDMA Band V

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Main 1 Ant.	Head	Rel 99 RMC	N/A	0	Left Touch	4183	836.6	25.00	24.40	0.180	0.207	
					Left Tilt	4183	836.6	25.00	24.40	0.106	0.122	
					Right Touch	4183	836.6	25.00	24.40	0.226	0.259	13
					Rightt Tilt	4183	836.6	25.00	24.40	0.105	0.121	
	Body-worn	Rel 99 RMC	N/A	15	Rear	4183	836.6	25.00	24.40	0.328	0.377	14
					Front	4183	836.6	25.00	24.40	0.177	0.203	
	Hotspot	Rel 99 RMC	N/A	10	Rear	4183	836.6	25.00	24.40	0.687	0.789	15
					Front	4183	836.6	25.00	24.40	0.160	0.184	
					Edge 2	4183	836.6	25.00	24.40	0.275	0.316	
					Edge 3	4183	836.6	25.00	24.40	0.357	0.410	
					Edge 4	4183	836.6	25.00	24.40	0.127	0.146	

10.6. LTE Band 2 (20MHz Bandwidth)

Main Ant.2 SAR results

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
Main 2 Ant.	Head	QPSK	OFF	0	Left Touch	19100	1900.0	1	0	24.50	24.20	0.243	0.260	16
								50	24	23.50	23.25	0.202	0.214	
					Left Tilt	19100	1900.0	1	0	24.50	24.20	0.110	0.118	
								50	24	23.50	23.25	0.097	0.103	
					Right Touch	19100	1900.0	1	0	24.50	24.20	0.145	0.155	
								50	24	23.50	23.25	0.168	0.178	
					Right Tilt	19100	1900.0	1	0	24.50	24.20	0.077	0.083	
								50	24	23.50	23.25	0.082	0.087	
	Body-worn	QPSK	Off	15	Rear	19100	1900.0	1	0	24.50	24.20	0.472	0.506	17
								50	24	23.50	23.25	0.404	0.428	
					Front	19100	1900.0	1	0	24.50	24.20	0.276	0.296	
								50	24	23.50	23.25	0.240	0.254	
	Hotspot	QPSK	On	10	Rear	19100	1900.0	1	0	22.00	21.13	0.445	0.544	
								50	24	22.00	21.23	0.467	0.558	18
					Front	19100	1900.0	1	0	22.00	21.13	0.331	0.404	
								50	24	22.00	21.23	0.346	0.413	
					Edge 3	19100	1900.0	1	0	22.00	21.13	0.358	0.437	
								50	24	22.00	21.23	0.374	0.447	
					Edge 4	19100	1900.0	1	0	22.00	21.13	0.208	0.254	
								50	24	22.00	21.23	0.210	0.251	

Sub Ant.1 SAR results

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
Sub 1 Ant.	Head	QPSK	N/A	0	Left Touch	18900	1880.0	1	99	20.00	19.63	0.563	0.613	19
								50	50	19.00	18.74	0.461	0.489	
					Left Tilt	18900	1880.0	1	99	20.00	19.63	0.390	0.425	
								50	50	19.00	18.74	0.315	0.334	
					Right Touch	18900	1880.0	1	99	20.00	19.63	0.235	0.256	
								50	50	19.00	18.74	0.193	0.205	
					Right Tilt	18900	1880.0	1	99	20.00	19.63	0.197	0.215	
								50	50	19.00	18.74	0.168	0.178	
	Body-worn	QPSK	N/A	15	Rear	18900	1880.0	1	99	20.00	19.63	0.091	0.099	20
								50	50	19.00	18.74	0.071	0.076	
					Front	18900	1880.0	1	99	20.00	19.63	0.074	0.080	
								50	50	19.00	18.74	0.058	0.061	
	Hotspot	QPSK	N/A	10	Rear	18900	1880.0	1	99	20.00	19.63	0.180	0.196	21
								50	50	19.00	18.74	0.145	0.154	
					Front	18900	1880.0	1	99	20.00	19.63	0.134	0.146	
								50	50	19.00	18.74	0.108	0.115	
					Edge 1	18900	1880.0	1	99	20.00	19.63	0.086	0.094	
								50	50	19.00	18.74	0.070	0.074	
					Edge 2	18900	1880.0	1	99	20.00	19.63	0.141	0.154	
								50	50	19.00	18.74	0.116	0.123	

Note(s):

1. For LTE Band 2 of Sub Ant.1., It work only EN-DC scenarios.

10.7. LTE Band 5 (10MHz Bandwidth)

Antenna	RF-Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
Main 1 Ant.	Head	QPSK	N/A	0	Left Touch	20525	836.5	1	25	24.70	24.50	0.221	0.231	
								25	12	23.70	23.59	0.175	0.179	
					Left Tilt	20525	836.5	1	25	24.70	24.50	0.126	0.132	
								25	12	23.70	23.59	0.101	0.104	
					Right Touch	20525	836.5	1	25	24.70	24.50	0.263	0.275	22
								25	12	23.70	23.59	0.211	0.216	
					Right Tilt	20525	836.5	1	25	24.70	24.50	0.157	0.164	
								25	12	23.70	23.59	0.125	0.128	
	Body-worn	QPSK	N/A	15	Rear	20525	836.5	1	25	24.70	24.50	0.312	0.327	23
								25	12	23.70	23.59	0.252	0.258	
					Front	20525	836.5	1	25	24.70	24.50	0.205	0.215	
								25	12	23.70	23.59	0.167	0.171	
	Hotspot	QPSK	N/A	10	Rear	20525	836.5	1	25	24.70	24.50	0.707	0.740	24
								25	12	23.70	23.59	0.600	0.615	
					Front	20525	836.5	1	25	24.70	24.50	0.207	0.217	
								25	12	23.70	23.59	0.163	0.167	
					Edge 2	20525	836.5	1	25	24.70	24.50	0.292	0.306	
								25	12	23.70	23.59	0.235	0.241	
					Edge 3	20525	836.5	1	25	24.70	24.50	0.366	0.383	
								25	12	23.70	23.59	0.293	0.301	
					Edge 4	20525	836.5	1	25	24.70	24.50	0.124	0.130	
								25	12	23.70	23.59	0.101	0.104	

10.8. LTE Band 12 (10MHz Bandwidth)

Antenna	RF-Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
Main 1 Ant.	Head	QPSK	N/A	0	Left Touch	23095	707.5	1	25	25.70	24.72	0.175	0.219	
								25	25	24.70	23.79	0.139	0.171	
					Left Tilt	23095	707.5	1	25	25.70	24.72	0.108	0.135	
								25	25	24.70	23.79	0.087	0.107	
					Right Touch	23095	707.5	1	25	25.70	24.72	0.202	0.253	25
								25	25	24.70	23.79	0.168	0.207	
					Right Tilt	23095	707.5	1	25	25.70	24.72	0.110	0.138	
								25	25	24.70	23.79	0.095	0.117	
	Body-worn	QPSK	N/A	15	Rear	23095	707.5	1	25	25.70	24.72	0.383	0.480	26
								25	25	24.70	23.79	0.311	0.383	
					Front	23095	707.5	1	25	25.70	24.72	0.219	0.274	
								25	25	24.70	23.79	0.187	0.231	
	Hotspot	QPSK	N/A	10	Rear	23095	707.5	1	25	25.70	24.72	0.504	0.632	27
								25	25	24.70	23.79	0.416	0.513	
					Front	23095	707.5	1	25	25.70	24.72	0.199	0.249	
								25	25	24.70	23.79	0.162	0.200	
					Edge 2	23095	707.5	1	25	25.70	24.72	0.357	0.447	
								25	25	24.70	23.79	0.318	0.392	
					Edge 3	23095	707.5	1	25	25.70	24.72	0.223	0.279	
								25	25	24.70	23.79	0.189	0.233	
					Edge 4	23095	707.5	1	25	25.70	24.72	0.258	0.323	
								25	25	24.70	23.79	0.217	0.268	

10.9. LTE Band 26 (15MHz Bandwidth)

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
Main 1 Ant.	Head	QPSK	N/A	0	Left Touch	26865	831.5	1	74	25.00	24.28	0.194	0.229	
								36	39	24.00	23.40	0.160	0.184	
					Left Tilt	26865	831.5	1	74	25.00	24.28	0.133	0.157	
								36	39	24.00	23.40	0.106	0.122	
					Right Touch	26865	831.5	1	74	25.00	24.28	0.257	0.303	28
								36	39	24.00	23.40	0.201	0.231	
					Right Tilt	26865	831.5	1	74	25.00	24.28	0.142	0.168	
								36	39	24.00	23.40	0.110	0.126	
	Body-worn	QPSK	N/A	15	Rear	26865	831.5	1	74	25.00	24.28	0.312	0.368	29
								36	39	24.00	23.40	0.246	0.282	
					Front	26865	831.5	1	74	25.00	24.28	0.185	0.218	
								36	39	24.00	23.40	0.153	0.176	
	Hotspot	QPSK	N/A	10	Rear	26865	831.5	1	74	25.00	24.28	0.630	0.744	30
								36	39	24.00	23.40	0.500	0.574	
					Front	26865	831.5	1	74	25.00	24.28	0.187	0.221	
								36	39	24.00	23.40	0.153	0.176	
					Edge 2	26865	831.5	1	74	25.00	24.28	0.303	0.358	
								36	39	24.00	23.40	0.243	0.279	
					Edge 3	26865	831.5	1	74	25.00	24.28	0.416	0.491	
								36	39	24.00	23.40	0.328	0.377	
					Edge 4	26865	831.5	1	74	25.00	24.28	0.140	0.165	
								36	39	24.00	23.40	0.112	0.129	

10.10. LTE Band 41 (20MHz Bandwidth)

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
Main 2 Ant.	Head	QPSK	N/A	0	Left Touch	39750	2506.00	1	0	24.00	23.79	0.164	0.172	31
								50	0	23.00	22.87	0.141	0.145	
					Left Tilt	39750	2506.00	1	0	24.00	23.79	0.050	0.052	
								50	0	23.00	22.87	0.047	0.048	
					Right Touch	39750	2506.00	1	0	24.00	23.79	0.112	0.118	
								50	0	23.00	22.87	0.093	0.096	
					Right Tilt	39750	2506.00	1	0	24.00	23.79	0.110	0.115	
								50	0	23.00	22.87	0.095	0.098	
	Body-worn	QPSK	N/A	15	Rear	39750	2506.00	1	0	24.00	23.79	0.298	0.313	32
								50	0	23.00	22.87	0.256	0.264	
					Front	39750	2506.00	1	0	24.00	23.79	0.259	0.272	
								50	0	23.00	22.87	0.216	0.223	
	Hotspot	QPSK	N/A	10	Rear	39750	2506.00	1	0	24.00	23.79	0.649	0.681	
								50	0	23.00	22.87	0.574	0.591	
						40185	2506.00	1	0	24.00	23.44	0.370	0.421	
								50	0	23.00	22.51	0.385	0.431	
						40620	2549.50	1	0	24.00	23.49	0.400	0.450	
								50	0	23.00	22.52	0.405	0.452	
						41055	2593.00	1	0	24.00	23.46	0.661	0.749	
								50	0	23.00	22.42	0.542	0.619	
								100	0	23.00	22.80	0.538	0.563	
						41490	2636.50	1	0	24.00	23.63	0.701	0.763	33
								50	0	23.00	22.72	0.564	0.602	
					Front	39750	2506.00	1	0	24.00	23.79	0.410	0.430	
								50	0	23.00	22.87	0.377	0.388	
					Edge 3	39750	2506.00	1	0	24.00	23.79	0.419	0.440	
								50	0	23.00	22.87	0.343	0.353	
					Edge 4	39750	2506.00	1	0	24.00	23.79	0.192	0.202	
								50	0	23.00	22.87	0.162	0.167	

10.11. LTE Band 66 (20MHz Bandwidth)

Main Ant.1 SAR results

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
Main 2 Ant.	Head	QPSK	Off	0	Left Touch	132322	1745.0	1	0	25.00	24.13	0.182	0.222	34
								50	0	24.00	23.33	0.155	0.181	
					Left Tilt	132322	1745.0	1	0	25.00	24.13	0.082	0.100	
								50	0	24.00	23.33	0.082	0.096	
					Right Touch	132322	1745.0	1	0	25.00	24.13	0.120	0.147	
								50	0	24.00	23.33	0.110	0.128	
					Right Tilt	132322	1745.0	1	0	25.00	24.13	0.075	0.092	
								50	0	24.00	23.33	0.067	0.078	
	Body-worn	QPSK	Off	15	Rear	132322	1745.0	1	0	25.00	24.13	0.394	0.481	35
								50	0	24.00	23.33	0.322	0.376	
					Front	132322	1745.0	1	0	25.00	24.13	0.247	0.302	
								50	0	24.00	23.33	0.277	0.323	
	Hotspot	QPSK	On	10	Rear	132322	1745.0	1	0	22.00	21.50	0.325	0.365	
								50	0	22.00	21.51	0.328	0.367	
					Front	132322	1745.0	1	0	22.00	21.50	0.247	0.277	
								50	0	22.00	21.51	0.277	0.310	
					Edge 3	132322	1745.0	1	0	22.00	21.50	0.347	0.389	36
								50	0	22.00	21.51	0.346	0.387	
					Edge 4	132322	1745.0	1	0	22.00	21.50	0.174	0.195	
								50	0	22.00	21.51	0.199	0.223	

Sub Ant.1 SAR results

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
Sub 1 Ant.	Head	QPSK	N/A	0	Left Touch	132572	1770.0	1	0	19.00	18.14	0.499	0.608	37
								50	0	18.00	17.21	0.403	0.483	
					Left Tilt	132572	1770.0	1	0	19.00	18.14	0.429	0.523	
								50	0	18.00	17.21	0.345	0.414	
					Right Touch	132572	1770.0	1	0	19.00	18.14	0.293	0.357	
								50	0	18.00	17.21	0.235	0.282	
					Right Tilt	132572	1770.0	1	0	19.00	18.14	0.257	0.313	
								50	0	18.00	17.21	0.206	0.247	
	Body-worn	QPSK	N/A	15	Rear	132572	1770.0	1	0	19.00	18.14	0.080	0.097	38
								50	0	18.00	17.21	0.062	0.074	
					Front	132572	1770.0	1	0	19.00	18.14	0.059	0.071	
								50	0	18.00	17.21	0.045	0.054	
	Hotspot	QPSK	N/A	10	Rear	132572	1770.0	1	0	19.00	18.14	0.149	0.182	39
								50	0	18.00	17.21	0.121	0.145	
					Front	132572	1770.0	1	0	19.00	18.14	0.111	0.135	
								50	0	18.00	17.21	0.086	0.104	
					Edge 3	132572	1770.0	1	0	19.00	18.14	0.109	0.133	
								50	0	18.00	17.21	0.083	0.100	
					Edge 4	132572	1770.0	1	0	19.00	18.14	0.105	0.128	
								50	0	18.00	17.21	0.085	0.102	

Note(s):

1. For LTE Band 66 of Sub Ant.1., It work only EN-DC scenarios.

10.12. NR Band n5 (20MHz Bandwidth)

Antenna	RF Exposure Conditions	Modulation	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
											Tune-up limit	Meas.	Meas.	Scaled	
Main 1 Ant.	Head	DFT-s-OFDM	QPSK	N/A	0	Left Touch	167300	836.5	1	53	24.00	23.96	0.208	0.210	
									50	28	24.00	23.98	0.215	0.216	
						Left Tilt	167300	836.5	1	53	24.00	23.96	0.120	0.121	
									50	28	24.00	23.98	0.123	0.124	
						Right Touch	167300	836.5	1	53	24.00	23.96	0.262	0.264	40
									50	28	24.00	23.98	0.256	0.257	
						Right Tilt	167300	836.5	1	53	24.00	23.96	0.153	0.154	
									50	28	24.00	23.98	0.157	0.158	
		CP-OFDM	QPSK	N/A	0	Right touch	167300	836.5	1	1	23.50	22.99	0.134	0.151	
	Body-worn	DFT-s-OFDM	QPSK	N/A	15	Rear	167300	836.5	1	53	24.00	23.96	0.241	0.243	
									50	28	24.00	23.98	0.243	0.244	41
						Front	167300	836.5	1	53	24.00	23.96	0.143	0.144	
									50	28	24.00	23.98	0.144	0.145	
		CP-OFDM	QPSK	N/A	15	Rear	167300	836.5	1	1	23.50	22.99	0.189	0.213	
	Hotspot	DFT-s-OFDM	QPSK	N/A	10	Rear	167300	836.5	1	53	24.00	23.96	0.508	0.513	42
									50	28	24.00	23.98	0.501	0.503	
						Front	167300	836.5	1	53	24.00	23.96	0.141	0.142	
									50	28	24.00	23.98	0.141	0.142	
						Edge 2	167300	836.5	1	53	24.00	23.96	0.216	0.218	
									50	28	24.00	23.98	0.209	0.210	
						Edge 3	167300	836.5	1	53	24.00	23.96	0.237	0.239	
									50	28	24.00	23.98	0.238	0.239	
						Edge 4	167300	836.5	1	53	24.00	23.96	0.133	0.134	
									50	28	24.00	23.98	0.134	0.135	
		CP-OFDM	QPSK	N/A	10	Rear	167300	836.5	1	1	23.50	22.99	0.449	0.505	

10.13. NR Band n66 (20MHz Bandwidth)

Main Ant.2 SAR results

Antenna	RF Exposure Conditions	Modulation	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
											Tune-up limit	Meas.	Meas.	Scaled	
Main 2 Ant.	Head	DFT-s-OFDM	QPSK	N/A	0	Left Touch	349000	1745.0	1	104	24.5	24.1	0.210	0.230	43
									50	28	24.5	24.1	0.208	0.227	
						Left Tilt	349000	1745.0	1	104	24.5	24.1	0.110	0.121	
									50	28	24.5	24.1	0.112	0.122	
						Right Touch	349000	1745.0	1	104	24.5	24.1	0.139	0.152	
									50	28	24.5	24.1	0.134	0.146	
						Right Tilt	349000	1745.0	1	104	24.5	24.1	0.104	0.114	
									50	28	24.5	24.1	0.098	0.107	
		CP-OFDM	QPSK	N/A	0	Left touch	349000	1745.0	1	1	23.0	22.4	0.142	0.164	
	Body-worn	DFT-s-OFDM	QPSK	N/A	15	Rear	349000	1745.0	1	104	24.5	24.1	0.258	0.283	
									50	28	24.5	24.1	0.271	0.296	44
						Front	349000	1745.0	1	104	24.5	24.1	0.177	0.194	
									50	28	24.5	24.1	0.184	0.201	
		CP-OFDM	QPSK	N/A	15	Rear	349000	1745.0	1	1	23.0	22.4	0.209	0.242	
	Hotspot	DFT-s-OFDM	QPSK	N/A	10	Rear	349000	1745.0	1	104	24.5	24.1	0.720	0.789	
									50	28	24.5	24.1	0.725	0.791	45
						Front	349000	1745.0	1	104	24.5	24.1	0.293	0.321	
									50	28	24.5	24.1	0.346	0.378	
						Edge 3	349000	1745.0	1	104	24.5	24.1	0.432	0.474	
									50	28	24.5	24.1	0.437	0.477	
						Edge 4	349000	1745.0	1	104	24.5	24.1	0.295	0.323	
									50	28	24.5	24.1	0.290	0.317	
		CP-OFDM	QPSK	N/A	10	Rear	349000	1745.0	1	1	23.0	22.4	0.449	0.519	

Note(s):

1. CP-OFDM mode were evaluated at worst configuration of DFT-s-OFDM in each exposure conditions.

Sub Ant.1 SAR results

Antenna	RF Exposure Conditions	Modulation	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
											Tune-up limit	Meas.	Meas.	Scaled	
Sub 1 Ant.	Head	DFT-s-OFDM	QPSK	On	0	Left Touch	349000	1745.0	1	53	18.0	17.6	0.509	0.553	46
									50	28	18.0	17.7	0.509	0.543	
						Left Tilt	349000	1745.0	1	53	18.0	17.6	0.340	0.369	
									50	28	18.0	17.7	0.343	0.366	
						Right Touch	349000	1745.0	1	53	18.0	17.6	0.318	0.345	
									50	28	18.0	17.7	0.318	0.339	
						Right Tilt	349000	1745.0	1	53	18.0	17.6	0.259	0.281	
									50	28	18.0	17.7	0.261	0.278	
		CP-OFDM	QPSK	On	0	Left touch	349000	1745.0	1	1	18.0	17.1	0.441	0.541	
	Body-worn	DFT-s-OFDM	QPSK	Off	15	Rear	349000	1745.0	1	53	24.0	23.5	0.442	0.493	47
									50	28	24.0	23.6	0.439	0.480	
						Front	349000	1745.0	1	53	24.0	23.5	0.277	0.309	
									50	28	24.0	23.6	0.320	0.350	
		CP-OFDM	QPSK	Off	15	Rear	349000	1745.0	1	1	22.5	21.3	0.215	0.285	
	Hotspot	DFT-s-OFDM	QPSK	On	10	Rear	349000	1745.0	1	53	22.0	21.5	0.597	0.671	
									50	28	22.0	21.5	0.603	0.672	48
						Front	349000	1745.0	1	53	22.0	21.5	0.336	0.378	
									50	28	22.0	21.5	0.337	0.376	
						Edge 1	349000	1745.0	1	53	22.0	21.5	0.226	0.254	
									50	28	22.0	21.5	0.229	0.255	
						Edge 2	349000	1745.0	1	53	22.0	21.5	0.285	0.321	
									50	28	22.0	21.5	0.285	0.318	
		CP-OFDM	QPSK	On	10	Rear	349000	1745.0	1	1	22.0	20.8	0.331	0.440	

Note(s):

1. CP-OFDM mode were evaluated at worst configuration of DFT-s-OFDM in each exposure conditions.
2. For NR Band n66 of Sub Ant.1., It work only EN-DC scenarios

10.14. Wi-Fi (DTS Band)

WLAN SAR results

Mode	RF Exposure Conditions	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle	Pow er (dBm)		1-g SAR (W/kg)		Note	Plot No.
								Tune-up limit	Meas.	Meas.	Scaled		
802.11b 1 Mbps	Head	On	0	Left Touch	11	2462.0	98.9%	12.00	11.82	0.055	0.058		
				Left Tilt	11	2462.0	98.9%	12.00	11.82	0.069	0.073		
				Right Touch	11	2462.0	98.9%	12.00	11.82	0.083	0.088		49
				Rightt Tilt	11	2462.0	98.9%	12.00	11.82	0.074	0.078		
	Body-w orn	Off	15	Rear	6	2437.0	98.9%	20.00	19.23	0.204	0.246		50
				Front	6	2437.0	98.9%	20.00	19.23	0.058	0.070		
	Hotspot	Off	10	Rear	6	2437.0	98.9%	20.00	19.23	0.395	0.477		51
				Front	6	2437.0	98.9%	20.00	19.23	0.106	0.128		
				Edge 1	6	2437.0	98.9%	20.00	19.23	0.159	0.192		
				Edge 4	6	2437.0	98.9%	20.00	19.23	0.098	0.118		

Note(s):

1. SAR testing is not required for OFDM mode(s) when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

10.15. Wi-Fi (U-NII Bands)

U-NII 2A Results

Antenna	Frequency Band	Mode	RF Exposure Conditions	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Duty Cycle (%)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Note	Plot No.
											Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled		
WLAN Ant	5.3 GHz U-NII 2A	802.11ac VHT 80 29.3 Mbps	Head	On	0	Left Touch	58	5290.0	0.237	98.3%	11.00	10.08	0.136	0.171			1	52
						Left Tilt	58	5290.0	0.234	98.3%	11.00	10.08						
						Right Touch	58	5290.0	0.124	98.3%	11.00	10.08						
						Right Tilt	58	5290.0	0.169	98.3%	11.00	10.08						
		802.11a 6 Mbps	Body-worn	Off	15	Rear	52	5260.0	0.569	98.7%	16.00	15.77	0.420	0.449			1	53
						Front	52	5260.0	0.128	98.7%	16.00	15.77						
			Product Specific 10-g	Off	0	Rear	52	5260.0	6.660	98.7%	16.00	15.77			0.991	1.059		
						Front	52	5260.0	1.060	98.7%	16.00	15.77						
						Edge 1	52	5260.0	5.540	98.7%	16.00	15.77			1.020	1.090	2	54
						Edge 4	52	5260.0	1.270	98.7%	16.00	15.77						

U-NII 2C Results

Antenna	Frequency Band	Mode	RF Exposure Conditions	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Duty Cycle (%)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Note	Plot No.
											Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled		
WLAN Ant	5.5 GHz U-NII 2C	802.11ac VHT 80 29.3 Mbps	Head	On	0	Left Touch	106	5530.0	0.452	98.3%	11.00	10.59	0.175	0.196			1	55
						Left Tilt	106	5530.0	0.299	98.3%	11.00	10.59						
						Right Touch	106	5530.0	0.196	98.3%	11.00	10.59						
						Right Tilt	106	5530.0	0.256	98.3%	11.00	10.59						
		802.11a 6 Mbps	Body-worn	Off	15	Rear	120	5600.0	0.281	98.7%	16.00	15.66	0.198	0.217			1	56
						Front	120	5600.0	0.187	98.7%	16.00	15.66						
			Product Specific 10-g	Off	0	Rear	120	5600.0	7.470	98.7%	16.00	15.66			1.050	1.151	2	
						Front	120	5600.0	1.300	98.7%	16.00	15.66						
						Edge 1	120	5600.0	8.530	98.7%	16.00	15.66			1.520	1.666		57
						Edge 4	120	5600.0	2.200	98.7%	16.00	15.66						

U-NII 3 Results

Antenna	Frequency Band	Mode	RF Exposure Conditions	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Duty Cycle (%)	Power (dBm)		1-g SAR (W/kg)		Note	Plot No.
											Tune-up limit	Meas.	Meas.	Scaled		
WLAN Ant	5.8 GHz U-NII 3	802.11ac VHT 80 29.3 Mbps	Head	On	0	Left Touch	155	5775.0	0.336	98.3%	11.00	10.39	0.145	0.170	1	58
						Left Tilt	155	5775.0	0.260	98.3%	11.00	10.39				
						Right Touch	155	5775.0	0.241	98.3%	11.00	10.39				
						Right Tilt	155	5775.0	0.196	98.3%	11.00	10.39				
		802.11a 6 Mbps	Body-worn	Off	15	Rear	165	5825.0	0.142	98.7%	16.00	15.48				
						Front	165	5825.0	0.168	98.7%	16.00	15.48	0.127	0.145	1	59
			Hotspot	Off	10	Rear	149	5745.0	0.267	98.7%	16.00	14.84	0.179	0.237	2	
						Front	149	5745.0	0.193	98.7%	16.00	14.84				
						Edge 1	149	5745.0	0.442	98.7%	16.00	14.84	0.344	0.455		60
						Edge 4	149	5745.0	0.155	98.7%	16.00	14.84				

Note(s):

1. When the Highest reported SAR is ≤ 0.4 or 1.0 W/kg (1-g or 10-g respectively). Therefore, further SAR measurements within this exposure condition are not required.
2. Highest reported SAR is > 0.4 or 1.0 W/kg (1-g or 10-g respectively). Due to the highest reported SAR for this test position, other test positions in this exposure condition were evaluated until a SAR ≤ 0.8 or 2.0 W/kg (1-g or 10-g respectively) was reported.
3. Testing for a second channel was required because the reported SAR for this test position was > 0.8 or 2.0 W/kg (1-g or 10-g respectively).
4. Additional testing required in order satisfying FCC simultaneous transmission limit criteria.

10.16. Bluetooth

Frequency Band	Mode	RF Exposure Conditions	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle (%)	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up limit	Meas.	Meas.	Scaled	
2.4 GHz	GFSK	Head	N/A	0	Left Touch	78	2480.0	77.5%	18.00	17.40	0.252	0.374	
					Left Tilt	78	2480.0	77.5%	18.00	17.40	0.319	0.473	
					Right Touch	78	2480.0	77.5%	18.00	17.40	0.386	0.573	
					Right Tilt	78	2480.0	77.5%	18.00	17.40	0.408	0.605	61
	GFSK	Body-worn	N/A	15	Rear	78	2480.0	77.5%	18.00	17.40	0.152	0.226	62
					Front	78	2480.0	77.5%	18.00	17.40	0.042	0.062	
	GFSK	Hotspot	N/A	10	Rear	78	2480.0	77.5%	18.00	17.40	0.318	0.472	63
					Front	78	2480.0	77.5%	18.00	17.40	0.076	0.113	
					Edge 1	78	2480.0	77.5%	18.00	17.40	0.126	0.187	
					Edge 4	78	2480.0	77.5%	18.00	17.40	0.077	0.114	

11. SAR Measurement Variability

In accordance with published RF Exposure KDB 865664 D01 SAR measurement 100 MHz to 6 GHz. These additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

1) Repeated measurement is not required when the original highest measured SAR is <0.8 or 2 W/kg (1-g or 10-g respectively); steps 2) through 4) do not apply.
2) When the original highest measured SAR is ≥ 0.8 or 2 W/kg (1-g or 10-g respectively), repeat that measurement once.
3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 or 3.6 W/kg (~ 10% from the 1-g or 10-g respective SAR limit).
4) Perform a third repeated measurement only if the original, first, or second repeated measurement is ≥ 1.5 or 3.75 W/kg (1-g or 10-g respectively) and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

Peak spatial-average (1g of tissue)

Frequency Band (MHz)	Air Interface	RF Exposure Conditions	Test Position	Repeated SAR (Yes/No)	Highest Measured SAR (W/kg)	Repeated Measured SAR (W/kg)	Largest to Smallest SAR Ratio
700	LTE Band 12	Hotspot	Rear	No	0.504	N/A	N/A
835	GSM 850	Hotspot	Rear	Yes	0.953	0.933	1.02
	WCDMA Band V	Hotspot	Rear	No	0.687	N/A	N/A
	LTE Band 5	Hotspot	Rear	No	0.707	N/A	N/A
	LTE Band 26	Hotspot	Rear	No	0.630	N/A	N/A
	NR Band n5	Hotspot	Rear	No	0.508	N/A	N/A
1750	WCDMA Band IV	Body-worn	Rear	No	0.345	N/A	N/A
	LTE Band 66	Hotspot	Rear	No	0.334	N/A	N/A
	NR Band n66	Hotspot	Rear	No	0.725	N/A	N/A
1900	GSM 1900	Hotspot	Rear	No	0.313	N/A	N/A
	WCDMA Band II	Body-worn	Rear	No	0.352	N/A	N/A
	LTE Band 2	Hotspot	Rear	No	0.467	N/A	N/A
2400	Wi-Fi 802.11b/g/n	Hotspot	Rear	No	0.395	N/A	N/A
	Bluetooth	Head	Right Touch	No	0.408	N/A	N/A
2600	LTE Band 41	Hotspot	Rear	No	0.701	N/A	N/A
5300	Wi-Fi 802.11a/n/ac	Body-worn	Rear	No	0.420	N/A	N/A
5500	Wi-Fi 802.11a/n/ac	Body-worn	Rear	No	0.212	N/A	N/A
5800	Wi-Fi 802.11a/n/ac	Hotspot	Edge 1	No	0.344	N/A	N/A

Peak spatial-average (10g of tissue)

Frequency Band (MHz)	Air Interface	RF Exposure Conditions	Test Position	Repeated SAR (Yes/No)	Highest Measured SAR (W/kg)	Repeated Measured SAR (W/kg)	Largest to Smallest SAR Ratio
5300	Wi-Fi 802.11a/n/ac	Product Specific 10-g	Edge 1	No	1.020	N/A	N/A
5500	Wi-Fi 802.11a/n/ac	Product Specific 10-g	Edge 1	No	1.520	N/A	N/A

Note(s):

Second Repeated Measurement is not required since the ratio of the largest to smallest SAR for the original and first repeated measurement is not > 1.20.

12. Simultaneous Transmission SAR Analysis

Simultaneous Transmission Condition

RF Exposure Condition	Item	Capable Transmit Configurations					
Head & Body-worn & Hotspot & Phablet-10g	1	WWAN (2G/3G/LTE/NR)	+	DTS			Scenarios
	2	WWAN (2G/3G/LTE/NR)	+	UNII			
	3	WWAN (2G/3G/LTE/NR)	+	BT			
	4	WWAN (2G/3G/LTE/NR)	+	UNII	+	BT	
	5	WWAN (ENDC(LTE+NR))	+	DTS			
	6	WWAN (ENDC(LTE+NR))	+	UNII			
	7	WWAN (ENDC(LTE+NR))	+	BT			
	8	WWAN (ENDC(LTE+NR))	+	UNII	+	BT	

Notes:

1. DTS supports Wi-Fi Direct, Hotspot and VoIP.
2. U-NII supports Wi-Fi Direct, Hotspot and VoIP.
3. GPRS, W-CDMA, LTE, NR supports Hotspot and VoIP
4. U-NII Radio can transmit simultaneously with Bluetooth Radio.
5. DTS Radio cannot transmit simultaneously with UNII Radio.
6. DTS Radio cannot transmit simultaneously with Bluetooth Radio.
7. BT tethering is considered about each RF exposure conditions.
8. NR Radio support to both SA and NSA (ENDC) Radio.

Simultaneous transmission SAR test exclusion considerations

KDB 447498 D01 General RF Exposure Guidance provides two procedures for determining simultaneous transmission SAR test exclusion: Sum of SAR and SAR to Peak Location Ratio (SPLSR)

Sum of SAR

To qualify for simultaneous transmission SAR test exclusion based upon Sum of SAR the sum of the reported standalone SARs for all simultaneously transmitting antennas shall be below the applicable standalone SAR limit. If the sum of the SARs is above the applicable limit then simultaneous transmission SAR test exclusion may still apply if the requirements of the SAR to Peak Location Ratio (SPLSR) evaluation are met.

SAR to Peak Location Ratio (SPLSR)

KDB 447498 D01 General RF Exposure Guidance explains how to calculate the SAR to Peak Location Ratio (SPLSR) between pairs of simultaneously transmitting antennas:

$$SPLSR = (SAR_1 + SAR_2)^{1.5} / Ri$$

Where:

SAR_1 is the highest reported or estimated SAR for the first of a pair of simultaneous transmitting antennas, in a specific test operating mode and exposure condition

SAR_2 is the highest reported or estimated SAR for the second of a pair of simultaneous transmitting antennas, in the same test operating mode and exposure condition as the first

Ri is the separation distance between the pair of simultaneous transmitting antennas. When the SAR is measured, for both antennas in the pair, it is determined by the actual x, y and z coordinates in the 1-g SAR for each SAR peak location, based on the extrapolated and interpolated result in the zoom scan measurement, using the formula of

$$[(x_1-x_2)_2 + (y_1-y_2)_2 + (z_1-z_2)_2]$$

In order for a pair of simultaneous transmitting antennas with the sum of 1-g SAR > 1.6 W/kg to qualify for exemption from Simultaneous Transmission SAR measurements, it has to satisfy the condition of:

$$(SAR_1 + SAR_2)^{1.5} / Ri \leq 0.04$$

When an individual antenna transmits at on two bands simultaneously, the sum of the highest *reported* SAR for the frequency bands should be used to determine SAR_1.or SAR_2. When SPLSR is necessary, the smallest distance between the peak SAR locations for the antenna pair with respect to the peaks from each antenna should be used.

The antennas in all antenna pairs that do not qualify for simultaneous transmission SAR test exclusion must be tested for SAR compliance, according to the enlarged zoom scan and volume scan post-processing procedures in KDB Publication 865664 D01

The antennas for the unlicensed transmitters are closely situated. As a result, the associated SAR hotspots are also closely situated. Some of the sum of SAR calculations yielded results over 1.6 W/kg. The SPSLR calculations for these situations were performed by treating the unlicensed SAR values as a single transmitter. The most conservative distance between all the unlicensed hotspots to the licensed hotspot was used for the value of *d* in the SPSLR calculation.

Sum-Peak Location Separation Ratio (SPLSR)

Per April 2022 TCB Workshop Notes, Sum-Peak Location Separation Ratio (SPLSR) procedure can be applied to evaluate to simultaneous transmission SAR analysis.

Sum-Peak Location Separation Ratio (SPLSR) can be applied when Simultaneous transmission SAR is over 1.6 or 4.0 W/kg (1-g or 10-g respectively), it can algebraically sum the SAR values of the co-located pair and use that value in SPLSR calculation.

The minimum distance between the nearest antennas of the pair of antennas in the same position as the spatially separated antennas shall be conservatively calculated.

Test procedure

Step.1 Sum zoom scan values on the co-located antenna pair.

Step.2 Apply PLSR procedure for the spatially separated antenna and aggregate SAR distribution of the co-located antenna pair's sum SAR and minimum distance are used for SPLSR calculation.

12.1. Sum of the SAR for GSM850 & Wi-Fi & BT

RF Exposure	Test Position	Standalone SAR (W/kg)				Sum of SAR (W/kg)			
		WWAN	DTS	UNII	BT	WWAN + DTS	WWAN + UNII	WWAN + BT	WWAN + BT + UNII
		1	2	3	4	1 + 2	1 + 3	1 + 4	1 + 3 + 4
Head (1-g SAR)	All position	0.359	0.088	0.196	0.605	0.447	0.555	0.964	1.160
Body-Worn (1-g SAR)	All position	0.507	0.246	0.449	0.226	0.753	0.956	0.733	1.182
Hotspot (1-g SAR)	Rear	1.094	0.477	0.237	0.472	1.571	1.331	1.566	1.803
	Front	0.249	0.128	0.455	0.113	0.377	0.704	0.362	0.817
	Edge 1		0.192	0.455	0.187				0.642
	Edge 2	0.347							
	Edge 3	0.522							
	Edge 4	0.159	0.118	0.455	0.114	0.277	0.614	0.273	0.728
Product Specific 10-g (10-g SAR)	All position			1.666					

SAR to Peak Location Separation Ratio (SPLSR)

RF Exposure	Test Position	Standalone SAR (W/kg)				Sum of SAR (W/kg) (1-g or 10-g)		Calculated Distance (mm)	1-g SPLSR (=<0.04) or 10-g SPSLR (=<0.10)	Volume Scan (Yes/No)	Figure
		WWAN	DTS	UNII	BT						
		1	2	3	4						
Hotspot (1-g SAR)	Rear	1.094		0.237	0.472	1+3+4	1.803				1
		1.094		0.237		1+3	1.331	162.5	0.01	No	
		1.094			0.472	1+4	1.566	153	0.01	No	
				0.237	0.472	3+4	0.709	15.6	0.04	No	

12.2. Sum of the SAR for GSM1900 & Wi-Fi & BT

RF Exposure	Test Position	Standalone SAR (W/kg)				Sum of SAR (W/kg)			
		WWAN	DTS	UNII	BT	WWAN + DTS	WWAN + UNII	WWAN + BT	WWAN + BT + UNII
		1	2	3	4	1 + 2	1 + 3	1 + 4	1 + 3 + 4
Head (1-g SAR)	All position	0.144	0.088	0.196	0.605	0.232	0.340	0.749	0.945
Body-Worn (1-g SAR)	All position	0.298	0.246	0.449	0.226	0.544	0.747	0.524	0.973
Hotspot (1-g SAR)	Rear	0.380	0.477	0.237	0.472	0.857	0.617	0.852	1.089
	Front	0.330	0.128	0.455	0.113	0.458	0.785	0.443	0.898
	Edge 1		0.192	0.455	0.187				0.642
	Edge 2								
	Edge 3	0.349							
	Edge 4	0.195	0.118	0.455	0.114	0.313	0.650	0.309	0.764
Product Specific 10-g (10-g SAR)	All position			1.666					

Note(s):

1. Green values are reference from highest SAR value of initial test position procedure in each RF exposure of each bands.

12.3. Sum of the SAR for WCDMA Band II & Wi-Fi & BT

RF Exposure	Test Position	Standalone SAR (W/kg)				Sum of SAR (W/kg)			
		WWAN	DTS	UNII	BT	WWAN + DTS	WWAN + UNII	WWAN + BT	WWAN + BT + UNII
		1	2	3	4	1 + 2	1 + 3	1 + 4	1 + 3 + 4
Head (1-g SAR)	All position	0.281	0.088	0.196	0.605	0.369	0.477	0.886	1.082
Body-Worn (1-g SAR)	All position	0.505	0.246	0.449	0.226	0.751	0.954	0.731	1.180
Hotspot (1-g SAR)	Rear	0.474	0.477	0.237	0.472	0.951	0.711	0.946	1.183
	Front	0.276	0.128	0.455	0.141	0.404	0.731	0.417	0.872
	Edge 1		0.192	0.455	0.113				0.568
	Edge 2								
	Edge 3	0.423							
	Edge 4	0.225	0.118	0.455	0.114	0.343	0.680	0.339	0.794
Product Specific 10-g (10-g SAR)	All position			1.666					

12.4. Sum of the SAR for WCDMA Band IV & Wi-Fi & BT

RF Exposure	Test Position	Standalone SAR (W/kg)				Sum of SAR (W/kg)			
		WWAN	DTS	UNII	BT	WWAN + DTS	WWAN + UNII	WWAN + BT	WWAN + BT + UNII
		1	2	3	4	1 + 2	1 + 3	1 + 4	1 + 3 + 4
Head (1-g SAR)	All position	0.211	0.088	0.196	0.605	0.299	0.407	0.816	1.012
Body-Worn (1-g SAR)	All position	0.486	0.246	0.449	0.226	0.732	0.935	0.712	1.161
Hotspot (1-g SAR)	Rear	0.427	0.477	0.237	0.472	0.904	0.664	0.899	1.136
	Front	0.388	0.128	0.455	0.113	0.516	0.843	0.501	0.956
	Edge 1		0.192	0.455	0.187				0.642
	Edge 2								
	Edge 3	0.427							
	Edge 4	0.252	0.118	0.455	0.114	0.370	0.707	0.366	0.821
Product Specific 10-g (10-g SAR)	All position			1.666					

12.5. Sum of the SAR for WCDMA Band V & Wi-Fi & BT

RF Exposure	Test Position	Standalone SAR (W/kg)				Sum of SAR (W/kg)			
		WWAN	DTS	UNII	BT	WWAN + DTS	WWAN + UNII	WWAN + BT	WWAN + BT + UNII
		1	2	3	4	1 + 2	1 + 3	1 + 4	1 + 3 + 4
Head (1-g SAR)	All position	0.259	0.088	0.196	0.605	0.347	0.455	0.864	1.060
Body-Worn (1-g SAR)	All position	0.377	0.246	0.449	0.226	0.623	0.826	0.603	1.052
Hotspot (1-g SAR)	Rear	0.789	0.477	0.237	0.472	1.266	1.026	1.261	1.498
	Front	0.184	0.128	0.455	0.113	0.312	0.639	0.297	0.752
	Edge 1		0.192	0.455	0.187				0.642
	Edge 2	0.316							
	Edge 3	0.410							
	Edge 4	0.146	0.118	0.455	0.114	0.264	0.601	0.260	0.715
Product Specific 10-g (10-g SAR)	All position			1.666					

Note(s):

1. Green values are reference from highest SAR value of initial test position procedure in each RF exposure of each bands.

12.6. Sum of the SAR for LTE Band 2 (Main 2 Ant.)& Wi-Fi & BT

RF Exposure	Test Position	Standalone SAR (W/kg)				Sum of SAR (W/kg)			
		WWAN	DTS	UNII	BT	WWAN + DTS	WWAN + UNII	WWAN + BT	WWAN + BT + UNII
		1	2	3	4	1 + 2	1 + 3	1 + 4	1 + 3 + 4
Head (1-g SAR)	All position	0.260	0.088	0.196	0.605	0.348	0.456	0.865	1.061
Body-Worn (1-g SAR)	All position	0.506	0.246	0.449	0.226	0.752	0.955	0.732	1.181
Hotspot (1-g SAR)	Rear	0.558	0.477	0.237	0.472	1.035	0.795	1.030	1.267
	Front	0.413	0.128	0.455	0.113	0.541	0.868	0.526	0.981
	Edge 1		0.192	0.455	0.187				0.642
	Edge 2								
	Edge 3	0.447							
	Edge 4	0.254	0.118	0.455	0.114	0.372	0.709	0.368	0.823
Product Specific 10-g (10-g SAR)	All position			1.666					

12.7. Sum of the SAR for LTE Band 5 & Wi-Fi & BT

RF Exposure	Test Position	Standalone SAR (W/kg)				Sum of SAR (W/kg)			
		WWAN	DTS	UNII	BT	WWAN + DTS	WWAN + UNII	WWAN + BT	WWAN + BT + UNII
		1	2	3	4	1 + 2	1 + 3	1 + 4	1 + 3 + 4
Head (1-g SAR)	All position	0.275	0.088	0.196	0.605	0.363	0.471	0.880	1.076
Body-Worn (1-g SAR)	All position	0.327	0.246	0.449	0.226	0.573	0.776	0.553	1.002
Hotspot (1-g SAR)	Rear	0.740	0.477	0.237	0.472	1.217	0.977	1.212	1.449
	Front	0.217	0.128	0.455	0.113	0.345	0.672	0.330	0.785
	Edge 1		0.192	0.455	0.187				0.642
	Edge 2	0.306							
	Edge 3	0.383							
	Edge 4	0.130	0.118	0.455	0.114	0.248	0.585	0.244	0.699
Product Specific 10-g (10-g SAR)	All position			1.666					

12.8. Sum of the SAR for LTE Band 12 & Wi-Fi & BT

RF Exposure	Test Position	Standalone SAR (W/kg)				Sum of SAR (W/kg)			
		WWAN	DTS	UNII	BT	WWAN + DTS	WWAN + UNII	WWAN + BT	WWAN + BT + UNII
		1	2	3	4	1 + 2	1 + 3	1 + 4	1 + 3 + 4
Head (1-g SAR)	All position	0.253	0.088	0.196	0.605	0.341	0.449	0.858	1.054
Body-Worn (1-g SAR)	All position	0.480	0.246	0.449	0.226	0.726	0.929	0.706	1.155
Hotspot (1-g SAR)	Rear	0.632	0.477	0.237	0.472	1.109	0.869	1.104	1.341
	Front	0.249	0.128	0.455	0.113	0.377	0.704	0.362	0.817
	Edge 1		0.192	0.455	0.187				0.642
	Edge 2	0.447							
	Edge 3	0.279							
	Edge 4	0.323	0.118	0.455	0.114	0.441	0.778	0.437	0.892
Product Specific 10-g (10-g SAR)	All position			1.666					

Note(s):

1. Green values are reference from highest SAR value of initial test position procedure in each RF exposure of each bands.

12.9. Sum of the SAR for LTE Band 26 & Wi-Fi & BT

RF Exposure	Test Position	Standalone SAR (W/kg)				Sum of SAR (W/kg)			
		WWAN	DTS	UNII	BT	WWAN + DTS	WWAN + UNII	WWAN + BT	WWAN + BT + UNII
		1	2	3	4	1 + 2	1 + 3	1 + 4	1 + 3 + 4
Head (1-g SAR)	All position	0.303	0.088	0.196	0.605	0.391	0.499	0.908	1.104
Body-Worn (1-g SAR)	All position	0.368	0.246	0.449	0.226	0.614	0.817	0.594	1.043
Hotspot (1-g SAR)	Rear	0.744	0.477	0.237	0.472	1.221	0.981	1.216	1.453
	Front	0.221	0.128	0.455	0.113	0.349	0.676	0.334	0.789
	Edge 1		0.192	0.455	0.187				0.642
	Edge 2	0.358							
	Edge 3	0.491							
	Edge 4	0.165	0.118	0.455	0.114	0.283	0.620	0.279	0.734
Product Specific 10-g (10-g SAR)	All position			1.666					

12.10. Sum of the SAR for LTE Band 66 (Main 2 Ant.) & Wi-Fi & BT

RF Exposure	Test Position	Standalone SAR (W/kg)				Sum of SAR (W/kg)			
		WWAN	DTS	UNII	BT	WWAN + DTS	WWAN + UNII	WWAN + BT	WWAN + BT + UNII
		1	2	3	4	1 + 2	1 + 3	1 + 4	1 + 3 + 4
Head (1-g SAR)	All position	0.222	0.088	0.196	0.605	0.310	0.418	0.827	1.023
Body-Worn (1-g SAR)	All position	0.481	0.246	0.449	0.226	0.727	0.930	0.707	1.156
Hotspot (1-g SAR)	Rear	0.367	0.477	0.237	0.472	0.844	0.604	0.839	1.076
	Front	0.310	0.128	0.455	0.113	0.438	0.765	0.423	0.878
	Edge 1		0.192	0.455	0.187				0.642
	Edge 2								
	Edge 3	0.389							
	Edge 4	0.223	0.118	0.455	0.114	0.341	0.678	0.337	0.792
Product Specific 10-g (10-g SAR)	All position			1.666					

12.11. Sum of the SAR for LTE Band 41 & Wi-Fi & BT

RF Exposure	Test Position	Standalone SAR (W/kg)				Sum of SAR (W/kg)			
		WWAN	DTS	UNII	BT	WWAN + DTS	WWAN + UNII	WWAN + BT	WWAN + BT + UNII
		1	2	3	4	1 + 2	1 + 3	1 + 4	1 + 3 + 4
Head (1-g SAR)	All position	0.172	0.088	0.196	0.605	0.260	0.368	0.777	0.973
Body-Worn (1-g SAR)	All position	0.313	0.246	0.449	0.226	0.559	0.762	0.539	0.988
Hotspot (1-g SAR)	Rear	0.763	0.477	0.237	0.472	1.240	1.000	1.235	1.472
	Front	0.430	0.128	0.455	0.113	0.558	0.885	0.543	0.998
	Edge 1		0.192	0.455	0.187				0.642
	Edge 2								
	Edge 3	0.440							
	Edge 4	0.202	0.118	0.455	0.114	0.320	0.657	0.316	0.771
Product Specific 10-g (10-g SAR)	All position			1.666					

Note(s):

1. Green values are reference from highest SAR value of initial test position procedure in each RF exposure of each bands.

12.12. Sum of the SAR for NR Band n5 & Wi-Fi & BT

RF Exposure	Test Position	Standalone SAR (W/kg)				Sum of SAR (W/kg)			
		WWAN	DTS	UNII	BT	WWAN + DTS	WWAN + UNII	WWAN + BT	WWAN + BT + UNII
		1	2	3	4	1 + 2	1 + 3	1 + 4	1 + 3 + 4
Head (1-g SAR)	All position	0.264	0.088	0.196	0.605	0.352	0.460	0.869	1.065
Body-Worn (1-g SAR)	All position	0.244	0.246	0.449	0.226	0.490	0.693	0.470	0.919
Hotspot (1-g SAR)	Rear	0.513	0.477	0.237	0.472	0.990	0.750	0.985	1.222
	Front	0.142	0.128	0.455	0.113	0.270	0.597	0.255	0.710
	Edge 1		0.192	0.455	0.187				0.642
	Edge 2	0.218							
	Edge 3	0.239							
	Edge 4	0.135	0.118	0.455	0.114	0.253	0.590	0.249	0.704
Product Specific 10-g (10-g SAR)	All position			1.666					

12.13. Sum of the SAR for NR Band n66 & Wi-Fi & BT

RF Exposure	Test Position	Standalone SAR (W/kg)				Sum of SAR (W/kg)			
		WWAN	DTS	UNII	BT	WWAN + DTS	WWAN + UNII	WWAN + BT	WWAN + BT + UNII
		1	2	3	4	1 + 2	1 + 3	1 + 4	1 + 3 + 4
Head (1-g SAR)	All position	0.230	0.088	0.196	0.605	0.318	0.426	0.835	1.031
Body-Worn (1-g SAR)	All position	0.296	0.246	0.449	0.226	0.542	0.745	0.522	0.971
Hotspot (1-g SAR)	Rear	0.791	0.477	0.237	0.472	1.268	1.028	1.263	1.500
	Front	0.378	0.128	0.455	0.113	0.506	0.833	0.491	0.946
	Edge 1		0.192	0.455	0.187				0.642
	Edge 2								
	Edge 3	0.477							
	Edge 4	0.323	0.118	0.455	0.114	0.441	0.778	0.437	0.892
Product Specific 10-g (10-g SAR)	All position			1.666					

12.14. Sum of the SAR for ENDC(LTE B2 (Sub 1 Ant.) + NR Bn5) & Wi-Fi & BT

RF Exposure	Test Position	Standalone SAR (W/kg)					Sum of SAR (W/kg)			
		WWAN		DTS	UNII	BT	WWAN + DTS	WWAN + UNII	WWAN + BT	WWAN + BT + UNII
		1-a(LTE)	1-a(NR)	2	3	4	1 + 2	1 + 3	1 + 4	1 + 3 + 4
Head (1-g SAR)	Left touch	0.613	0.216	0.058	0.196	0.374	0.887	1.025	1.203	1.399
	Left tilt	0.425	0.124	0.073	0.196	0.473	0.622	0.745	1.022	1.218
	Right touch	0.256	0.264	0.088	0.196	0.573	0.608	0.716	1.093	1.289
	Right tilt	0.215	0.158	0.078	0.196	0.605	0.451	0.569	0.978	1.174
Body-Worn (1-g SAR)	All position	0.099	0.246	0.133	0.449	0.226	0.478	0.794	0.571	1.020
Hotspot (1-g SAR)	Rear	0.196	0.477	0.536	0.237	0.472	1.209	0.910	1.145	1.382
	Front	0.146	0.128	0.078	0.455	0.113	0.352	0.729	0.387	0.842
	Edge 1	0.094	0.192	0.135	0.455	0.187	0.229	0.549	0.281	0.642
	Edge 2	0.154								
	Edge 3									
	Edge 4		0.118	0.057	0.455	0.114				
Product Specific 10-g (10-g SAR)	All position				1.666					

Note(s):

1. Green values are reference from highest SAR value of initial test position procedure in each RF exposure of each bands.

12.15. Sum of the SAR for ENDC(LTE B66 (Sub 1 Ant.) + NR Bn5) & Wi-Fi & BT

RF Exposure	Test Position	Standalone SAR (W/kg)					Sum of SAR (W/kg)			
		WWAN		DTS	UNII	BT	WWAN + DTS	WWAN + UNII	WWAN + BT	WWAN + BT + UNII
		1-a(LTE)	1-a(NR)	2	3	4	1 + 2	1 + 3	1 + 4	1 + 3 + 4
Head (1-g SAR)	Left touch	0.608	0.216	0.058	0.196	0.374	0.882	1.020	1.198	1.394
	Left tilt	0.523	0.124	0.073	0.196	0.473	0.720	0.843	1.120	1.316
	Right touch	0.357	0.264	0.088	0.196	0.573	0.709	0.817	1.194	1.390
	Right tilt	0.313	0.158	0.078	0.196	0.605	0.549	0.667	1.076	1.272
Body-Worn (1-g SAR)	All position	0.097	0.246	0.246	0.449	0.226	0.589	0.792	0.569	1.018
Hotspot (1-g SAR)	Rear	0.182	0.477	0.477	0.237	0.472	1.136	0.896	1.131	1.368
	Front	0.135	0.128	0.128	0.455	0.113	0.391	0.718	0.376	0.831
	Edge 1	0.133	0.192	0.192	0.455	0.187	0.325	0.588	0.320	0.642
	Edge 2	0.128								
	Edge 3									
	Edge 4		0.118	0.118	0.455	0.114				
Product Specific 10-g (10-g SAR)	All position				1.666					

12.16. Sum of the SAR for ENDC(LTE B5 + NR Bn66 (Sub 1 Ant.)) & Wi-Fi & BT

RF Exposure	Test Position	Standalone SAR (W/kg)					Sum of SAR (W/kg)			
		WWAN		DTS	UNII	BT	WWAN + DTS	WWAN + UNII	WWAN + BT	WWAN + BT + UNII
		1-a(LTE)	1-a(NR)	2	3	4	1 + 2	1 + 3	1 + 4	1 + 3 + 4
Head (1-g SAR)	Left touch	0.231	0.553	0.058	0.196	0.374	0.842	0.980	1.158	1.354
	Left tilt	0.132	0.369	0.073	0.196	0.473	0.574	0.697	0.974	1.170
	Right touch	0.275	0.345	0.088	0.196	0.573	0.708	0.816	1.193	1.389
	Right tilt	0.164	0.281	0.078	0.196	0.605	0.523	0.641	1.050	1.246
Body-Worn (1-g SAR)	All position	0.327	0.493	0.246	0.449	0.226	1.066	1.269	1.046	1.495
Hotspot (1-g SAR)	Rear	0.740	0.672	0.477	0.237	0.472	1.889	1.649	1.884	2.121
	Front	0.217	0.378	0.128	0.455	0.113	0.723	1.050	0.708	1.163
	Edge 1		0.255	0.192	0.455	0.187				0.642
	Edge 2	0.306	0.321							
	Edge 3	0.383								
	Edge 4	0.130		0.118	0.455	0.114	0.248	0.585	0.244	0.699
Product Specific 10-g (10-g SAR)	All position				1.666					

Sum-Peak Location Separation Ratio

RF Exposure	Test Position	Standalone SAR (W/kg)					Sum of SAR (W/kg) (1-g or 10-g)		Calculated Distance (mm)	1-g SPLSR (=<0.04) or 10-g SPSLR (=<0.10)	Volume Scan (Yes/No) Note.2	Figure
		WWAN		DTS	UNII	BT						
		1a	1b	2	3	4						
Hotspot (1-g SAR)	Rear	0.740	0.672	0.477			(1a+1b)+2	1.889				2
		0.740	0.672				1a+1b	1.412	150.3	0.01	No	
		0.740		0.477			1a+2	1.217	158.7	0.01	No	
			0.672	0.477			1b+2	1.149	51.9	0.02	No	
Hotspot (1-g SAR)	Rear	0.740	0.672		0.237	0.472	(1a+1b)+3+4	2.121				3
		0.740			0.709		1a+(3+4)	1.449	157.1	0.01	No	
			0.672		0.709		1b+(3+4)	1.381	41.3	0.04	No	
Sum-Peak Location Separation Ratio Note.3					0.709		3+4	0.709				

Note(s):

1. Green value is estimated SAR value.
2. Simultaneous transmission scenarios (1+3 &1+4) are a subset of (1+3+4) scenario.
3. According to 2022 Apr TCBC Workshop, SPLSR (Sum-Peak Location Separation Ratio) can algebraically sum the SAR values of the co-located pair and use that value in SPLSR calculation. Use the minimum distance between the spatially separated antenna and the closest antenna of the co-located antenna pair to be conservative.

12.17. Sum of the SAR for ENDC(LTE B2 (Sub 1 Ant.) + NR Bn66) & Wi-Fi & BT

RF Exposure	Test Position	Standalone SAR (W/kg)					Sum of SAR (W/kg)			
		WWAN		DTS	UNII	BT	WWAN + DTS	WWAN + UNII	WWAN + BT	WWAN + BT + UNII
		1-a(LTE)	1-a(NR)	2	3	4	1 + 2	1 + 3	1 + 4	1 + 3 + 4
Head (1-g SAR)	Left touch	0.613	0.230	0.058	0.196	0.374	0.901	1.039	1.217	1.413
	Left tilt	0.425	0.122	0.073	0.196	0.473	0.620	0.743	1.020	1.216
	Right touch	0.256	0.152	0.088	0.196	0.573	0.496	0.604	0.981	1.177
	Right tilt	0.215	0.114	0.078	0.196	0.605	0.407	0.525	0.934	1.130
Body-Worn (1-g SAR)	All position	0.099	0.296	0.246	0.449	0.226	0.641	0.844	0.621	1.070
Hotspot (1-g SAR)	Rear	0.196	0.791	0.477	0.237	0.472	1.464	1.224	1.459	1.696
	Front	0.146	0.378	0.128	0.455	0.113	0.652	0.979	0.637	1.092
	Edge 1	0.094		0.192	0.455	0.187	0.286	0.549	0.281	0.642
	Edge 2	0.154								
	Edge 3		0.477							
	Edge 4		0.323	0.118	0.455	0.114				
Product Specific 10-g (10-g SAR)	All position				1.666					

Sum-Peak Location Separation Ratio

RF Exposure	Test Position	Standalone SAR (W/kg)					Sum of SAR (W/kg) (1-g or 10-g)		Calculated Distance (mm)	1-g SPLSR (=<0.04) or 10-g SPSLR (=<0.10)	Volume Scan (Yes/No) Note.2	Figure
		WWAN		DTS	UNII	BT						
		1a	1b	2	3	4						
Hotspot (1-g SAR)	Rear	0.196	0.791		0.237	0.472	1a+1b+3+4	1.696				4
		0.558	0.791				1a+1b	1.349	151.7	0.01	No	
		0.196			0.709		1a+(3+4)	0.905	36.4	0.02	No	
			0.791		0.709		1b+(3+4)	1.500	142.8	0.01	No	
Sum-Peak Location Separation Ratio Note.3					0.709		3+4	0.709				

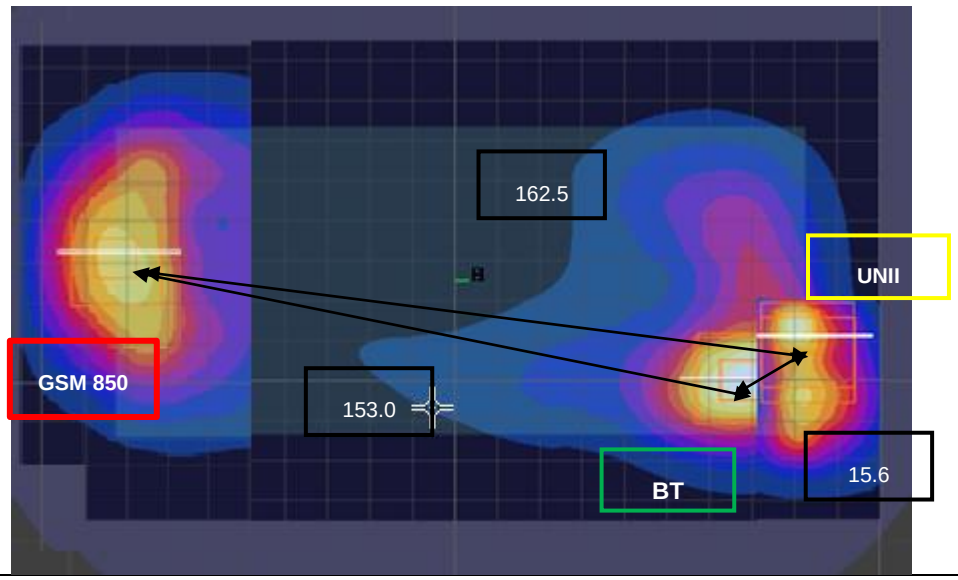
Note(s):

1. Green value is estimated SAR value.
2. According to 2022 Apr TCBC Workshop, SPLSR (Sum-Peak Location Separation Ratio) can algebraically sum the SAR values of the co-located pair and use that value in SPLSR calculation. Use the minimum distance between the spatially separated antenna and the closest antenna of the co-located antenna pair to be conservative.

Conclusion:

1. Simultaneous Transmission SAR analysis results is satisfied the FCC Limit requirement according to procedure with “Sum of SAR” or “Sum-Peak Location Separation Ratio”

Figure (1)

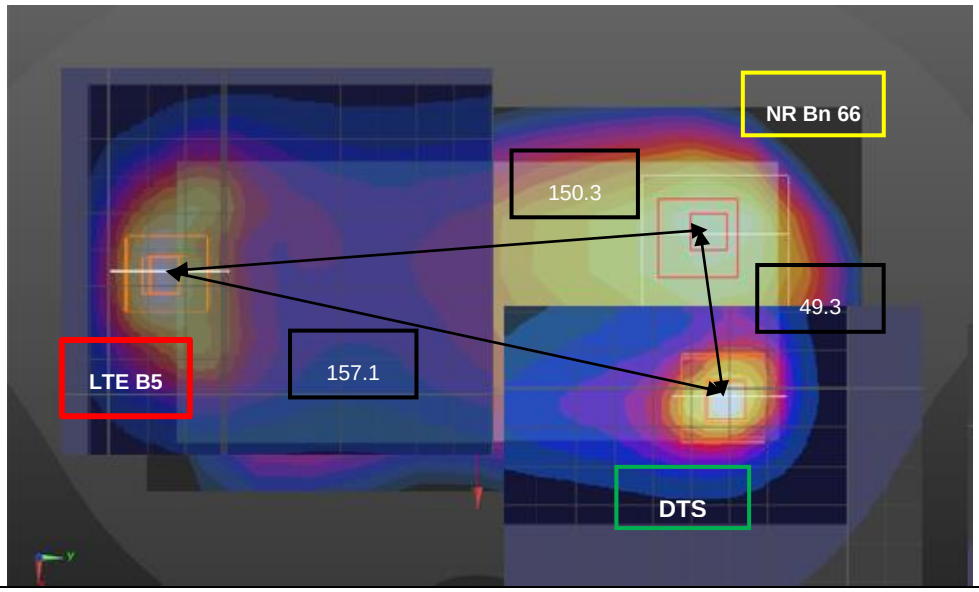


Mode		SAR	X	Y	Z	d: Calculated distance (mm)	
		W/kg	m	m	m		
GSM 850	1	1.094	-0.0312	-0.0809	0.0000	1 + 2	162.5
UNII	2	0.237	-0.0111	0.0804	0.0000	1 + 3	153.0
BT	3	0.472	-0.0005	0.0690	0.0000	2 + 3	15.6

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Figure (2)

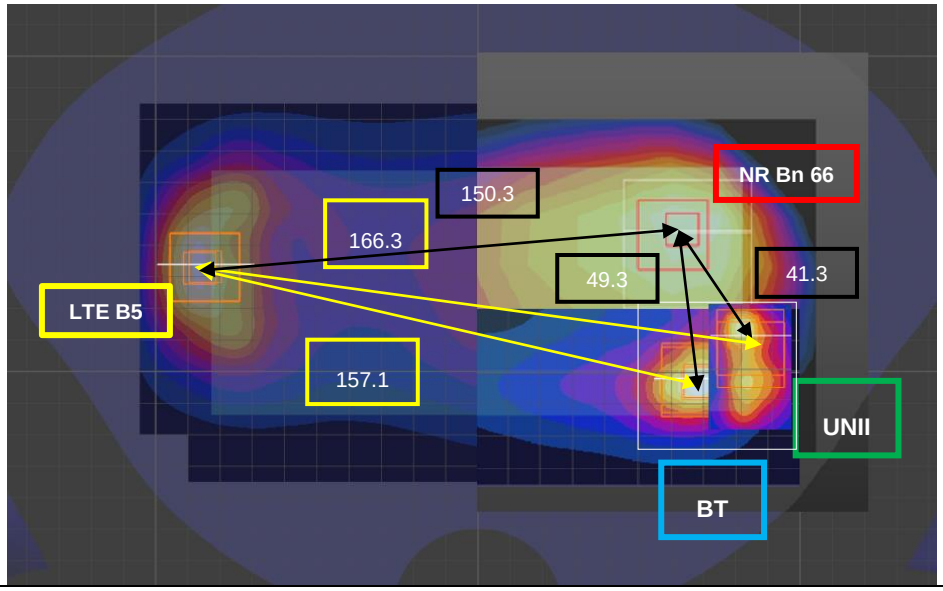


Mode		SAR	X	Y	Z	d: Calculated distance (mm)	
		W/kg	m	m	m		
LTE B5	1	0.74	-0.0366	-0.0839	0.0000	1 + 2	150.3
NR Bn 66	2	0.672	-0.0497	0.0658	0.0000	1 + 3	157.1
DTS	3	0.477	-0.0005	0.0690	0.0000	2 + 3	49.3

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Figure (3)

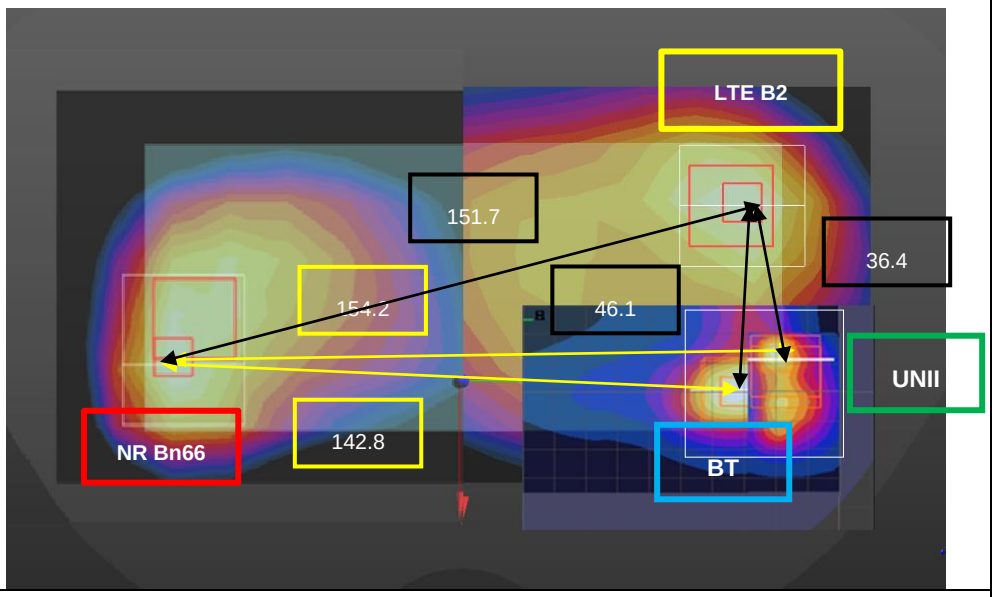


Mode		SAR	X	Y	Z	d: Calculated distance (mm)		
		W/kg	m	m	m			
LTE B5	1	0.74	-0.0366	-0.0839	0.0000	1 + 2	1 + 2	150.3
NR Bn 66	2	0.672	-0.0497	0.0658	0.0000	1 + (3 + 4)	1 + 3	157.1
BT	3	0.237	-0.0005	0.0690	0.0000		1 + 4	166.3
UNI	4	0.472	-0.0111	0.0804	0.0000	2 + (3 + 4)	2 + 3	49.3
[redacted]							2 + 4	41.3

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Figure (4)



Mode		SAR	X	Y	Z	d: Calculated distance (mm)		
		W/kg	m	m	m			
LTE B2	1	0.196	-0.0465	0.0720	0.0000	1 + 2	1 + 2	151.7
MR Bn66	2	0.791	-0.0044	-0.0737	0.0000	1 + (3 + 4)	1 + 3	36.4
UNII	3	0.237	-0.0111	0.0804	0.0000		1 + 4	46.1
BT	4	0.472	-0.0005	0.0690	0.0000	2 + (3 + 4)	2 + 3	154.2
[redacted]							2 + 4	142.8

The Peak Location Separation Distance is computed by using the formula below:

Appendixes

Refer to separated files for the following appendixes.

4790406778-S1 FCC Report SAR_App A_ Photos & Ant. Locations

4790406778-S1 FCC Report SAR_App B_Highest SAR Test Plots

4790406778-S1 FCC Report SAR_App C_System Check Plots

4790406778-S1 FCC Report SAR_App D_SAR Tissue Ingredients

4790406778-S1 FCC Report SAR_App E_Probe Cal. Certificates

4790406778-S1 FCC Report SAR_App F_Dipole Cal. Certificates

4790406778-S1 FCC Report SAR_App G_Proximity Sensor feature

4790406778-S1 FCC Report SAR_App H_LTE Carrier Aggregation

END OF REPORT